



# California Regional Water Quality Control Board

## San Francisco Bay Region

Alan C. Lloyd, Ph.D.  
Agency Secretary

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Arnold Schwarzenegger  
Governor

SEP 28 2005

File No. 2119.1048 (RS)

Certified Mail No. 70051160000194348782

Mr. Marcus Cole  
Tesoro Refining & Marketing Company  
Golden Eagle Refinery  
150 Solano Way  
Martinez, CA 94553-1487

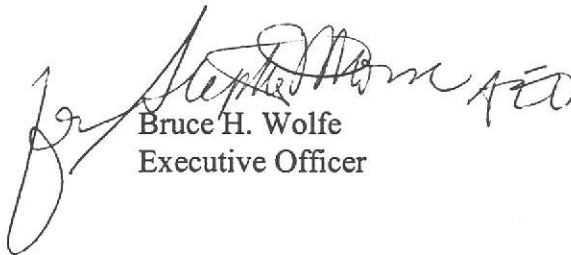
NOTICE: Transmittal of Final Order No. R2-2005-0041, Tesoro Refining & Marketing Company, Golden Eagle Refinery, Contra Costa County, NPDES No. CA0004961

Dear Mr. Marcus Cole:

Attached is a copy of the Final Order No. R2-2005-0041 adopted by the Board on September 21, 2005. The requirements of this Order are effective starting on December 1, 2005.

You may contact Robert Schlipf at (510) 622-2478 if you have any questions.

Sincerely,



Bruce H. Wolfe  
Executive Officer

Attachments: Order No. R2-2005-0041



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**ORDER NO. R2-2005-0041  
NPDES PERMIT NO. CA0004961**

**REISSUING WASTE DISCHARGE REQUIREMENTS FOR:  
TESORO REFINING & MARKETING COMPANY  
GOLDEN EAGLE REFINERY  
MARTINEZ, CONTRA COSTA COUNTY**

**FINDINGS**

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. *Discharger and Permit Application.* Tesoro Golden Eagle Refinery (hereinafter called the Discharger) applied to the Board for reissuance of waste discharge requirements and a permit to discharge treated wastewater and stormwater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

**Facility Description**

2. The Discharger operates a petroleum refinery with an average crude-run throughput of approximately 157,000 barrels per day. The Discharger receives crude oil by tanker or pipelines for the production of unleaded gasoline and diesel fuels. According to 40 CFR Part 419.20, the U.S. Environmental Protection Agency (USEPA) has classified this facility as a cracking refinery.
3. The USEPA and the Board have classified this Discharger as a major discharger.

**Purpose of Order**

4. This NPDES permit regulates the discharge of effluent from the Discharger's wastewater treatment plant (WWTP) and the discharges of all storm water associated with industrial activity from the refinery to Suisun Bay and Carquinez Strait, both waters of the United States. These discharges are currently governed by Waste Discharge Requirements specified in Order Nos. 00-011, 00-056, and 01-138 adopted by the Board on February 16, 2000, July 21, 2000, and November 28, 2001.

**Discharge Description**

5. The discharges are described below and are based on information contained in the Discharger's Report of Waste Discharge (ROWD) and recent self-monitoring reports. Figure 1 of this Order shows the location for all discharge points (i.e., process wastewater and stormwater), and Figure 2 shows the flow process diagram.
  - a. **Waste 001** consists of an average of 5.1 million gallons per day (mgd) of treated process wastewaters, including wastewater from sour water strippers, ammonia recovery unit, acid plant effluent, sanitary wastewater, cooling tower blowdown, boiler blowdown, cooling tower and boiler blowdown from the Foster Wheeler Cogeneration Plant, neutralized

demineralizer regeneration water (hereinafter the Reject Water) from the water treatment system, fire water system, groundwater from remediation activities; non-hazardous wastewater generated from offsite Discharger-owned facilities, process wastewater from the Monsanto Company Catalyst Plant, and cooling tower and boiler blowdown from Air Liquide Carbon Dioxide Plant. During wet weather, Waste 001 has an additional component consisting of stormwater runoff from various onsite developed areas of Tracts 1, 2 and 3, and offsite facilities<sup>1</sup>. Waste 001 is treated at the onsite wastewater treatment plant prior to being discharged to Suisun Bay through a 27-inch diameter outfall. The outfall, referred to as E-001, terminates with a multi-port diffuser (lat. 38°02'54", long. 122°05'22") located under the Avon Wharf 45 feet below mean lower low water. Table 1 below describes the quality of treated effluent (E-001) based on self-monitoring data from 2001 through 2004.

**Table 1: Summary of Pollutants in Treated Wastewater at E-001**

Parameter	Average <sup>1</sup>	Daily Maximum
pH, standard units	6.0 (minimum)	8.9
Temperature (°F)	44 (minimum)	89
Total Coliform Organisms <sup>2</sup> (MPN/ 100 mL)	Nondetect	16,000
Total Coliform Organisms <sup>3</sup> (MPN/100 mL)	Nondetect	1,100
BOD (mg/L)	8.2	18.3
COD (mg/L)	66	240
TSS (mg/L)	12.8	84
Ammonia as N (mg/L)	7.8	29.4
Oil and Grease (mg/L)	Nondetect	9.4
Total Phenols (µg/L)	Nondetect	10
Arsenic (µg/L)	4.1	11
Cadmium (µg/L)	0.09	0.4
Chromium VI (µg/L)	Nondetect	2.0
Copper (µg/L)	4.6	20
Lead (µg/L)	0.9	3.5
Mercury (µg/L)	0.0073	0.0375
Nickel (µg/L)	15.1	87
Selenium (µg/L)	11.6	41
Silver (µg/L)	Nondetect	0.09
Zinc (µg/L)	11.1	26
Cyanide (µg/L)	Nondetect	28

<sup>1</sup> Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 1 is ND.

<sup>2</sup> Refers to E-001-D2 – a description is included in the Self-Monitoring Program

<sup>3</sup> Refers to E-001-D1 – a description is included in the Self-Monitoring Program

- b. **Waste 003** consists of stormwater runoff from an area of approximately 120 acres in the central and western portions of the Tract 4 tank farm. Stormwater that falls on the west side of Tract 4 is collected within tank dikes and several retention ponds downhill of the tanks. A long retention basin further downhill serves as a backup for these ponds. If runoff is

<sup>1</sup> Offsite contaminated stormwater runoff from the neighboring facilities including: Air Liquide, Chevron Avon Terminal, Contra Costa Electric, Foster-Wheeler Energy Corporation, Air Products Hydrogen Plant, Monsanto Company, Royal Trucking, Kinder Morgan Energy Partners, Southern Pacific Transportation Company, and Texaco Metering Station.

excessive, stormwater will be discharged indirectly (laundered) to Pacheco Slough via L-shaped overflow pipes at two possible locations that draw water from below the surface, thereby keeping oil and other floating material in the pond for subsequent removal. Since these two locations are in proximity to each other, they are collectively designated as E-003 (lat. 38°00'44", long. 122°03'55"). The Discharger has not discharged stormwater through this outfall in the past five years.

- c. **Waste 004** consists of stormwater runoff from an area of 140 to 150 acres including the southeast portion of the Tract 4 tank farm and all of the Tract 6 tank farm, and offsite facilities including the Monsanto Company Catalyst Plant, Air Liquide, Chevron Bulk Terminal Station, Kinder Morgan Energy Partners, Texaco Pump Station, and PG&E Substation. Stormwater is collected, conveyed through ditches, and discharged to the Cardox Pond, from which stormwater is pumped to E-001 or discharged indirectly (laundered) via L-shaped overflow pipes at six possible locations to Hastings Slough. These six discharge locations are approximately a foot away from each other, and the quality of water leaving the six pipes is expected to be similar. These discharge locations are collectively designated as E-004 (lat. 38°01'21", long. 122°03'30"). Before routing stormwater to the Cardox Pond, the Discharger stores stormwater in the Deacon Stormwater Impoundment Basin. Order No. R2-2004-0056 for the Discharger indicates that petroleum hydrocarbon spills from the tank farm may have periodically entered this pond, and that a staff review of historical records indicates that it is likely that petroleum waste were deposited in the impoundment until the early 1990s. To document the potential release of hydrocarbons to Hastings Slough, this Order requires that the Discharger continue to monitor for oil and grease, TPH gasoline, and TPH diesel. Table 2 below describes the quality of stormwater runoff at E-004 based on self-monitoring data from 2002 through 2004.

**Table 2: Summary of Pollutants in Stormwater at E-004**

<u>Parameter</u>	<u>Average<sup>1</sup></u>	<u>Daily Maximum</u>
Total Organic Carbon (mg/L)	10.3	13
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.85 (minimum)	8.5
Total Suspended Solids (mg/L)	30	61
TPH gasoline (µg/L)	<50	<50
TPH diesel (µg/L)	190	430

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 2 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 10 mg/L (10 samples).

- d. **Waste 005** consists of stormwater runoff from various small areas. Table 3 below describes the discharge locations and pollutants of concern.

**Table 3: Discharge Locations & Potential Pollutants at E-005**

<b>Area</b>	<b>Location</b>	<b>Current E-005 Discharge</b>	<b>Potential Pollutants<sup>1</sup></b>
U-1TE	East side of Tract 1	None	TPHs, O&G
U-T2N	North end of Tract 2	None	Sed, O&G
U-T2NW	NW corner of Tract 2	E-005-T2NW	Sed, O&G
U-T2S	South end of Tract 2	E-005-T2S(a),(b),(c)	Sed, Metals, O&G



Area	Location	Current E-005 Discharge	Potential Pollutants <sup>1</sup>
U-T2SW	SW corner of Tract 2	E-005-T2SW	Sed, Metals, O&G, TPHs
U-T3N	North end of Tract 3	None	TPHs, O&G
U-T3SE	SE corner of Tract 3	None	None
U-T3SW	SW corner of Tract 3	None	None
U-T4NW	NW corner of Tract 4	E-005-T4NW	Sed, O&G
U-T4SW	SW corner of Tract 4	E-005-T4SW	Sed, O&G
U-T6NE	NE corner of Tract 6	None	Sed, Metals, O&G, TPHs
U-T6SW	SW corner of Tract 6	None	None
U-AW	West end of Amorco	None	Sed., O&G, TPHs
U-AS	South side of Amorco	E-005-AS <sup>2</sup>	Sed., O&G, TPHs

<sup>1</sup> TPH=Total Petroleum Hydrocarbons, O&G=Oil and Grease, Sed=Sediment

<sup>2</sup> E-005-AS has not discharged in the past five years.

Tables 4 through 10 below describe the quality of stormwater runoff at E-005 based on self-monitoring data from 2002 through 2004.

**Table 4: Summary of Pollutants in Stormwater at E-005 U-T2NW**

Parameter	Average <sup>1</sup>	Daily Maximum
Total Organic Carbon (mg/L)	8.0	25
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.92 (minimum)	8.07
Total Suspended Solids (mg/L)	18	72
Conductivity (µmhos/cm)	171	270

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 4 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (5 samples).

**Table 5: Summary of Pollutants in Stormwater at E-005 U-T2S-A**

Parameter	Average <sup>1</sup>	Daily Maximum
Total Organic Carbon (mg/L)	13	28
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.84 (minimum)	8.9
Total Suspended Solids (mg/L)	27	54
Conductivity (µmhos/cm)	730	840

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 5 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (5 samples).

**Table 6: Summary of Pollutants in Stormwater at E-005 U-T2S-B**

Parameter	Average <sup>1</sup>	Daily Maximum
Total Organic Carbon (mg/L)	12	20
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	7.1 (minimum)	8.15
Total Suspended Solids (mg/L)	91	280
Conductivity (µmhos/cm)	650	1300

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 6 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (5 samples).

**Table 7: Summary of Pollutants in Stormwater at E-005 U-T2S-C**

<u>Parameter</u>	<u>Average<sup>1</sup></u>	<u>Daily Maximum</u>
Total Organic Carbon (mg/L)	4.4	11
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.98 (minimum)	7.8
Total Suspended Solids (mg/L)	24	44
Conductivity (µmhos/cm)	130	300

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 7 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (5 samples).

**Table 8: Summary of Pollutants in Stormwater at E-005 U-T2SW**

<u>Parameter</u>	<u>Average<sup>1</sup></u>	<u>Daily Maximum</u>
Total Organic Carbon (mg/L)	9.4	21
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.87 (minimum)	8.01
Total Suspended Solids (mg/L)	31	54
Conductivity (µmhos/cm)	170	190

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 8 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (3 samples)

**Table 9: Summary of Pollutants in Stormwater at E-005 U-T4NW**

<u>Parameter</u>	<u>Average<sup>1</sup></u>	<u>Daily Maximum</u>
Total Organic Carbon (mg/L)	13	22
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	7.34 (minimum)	8.1
Total Suspended Solids (mg/L)	140	310
Conductivity (µmhos/cm)	340	630

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 9 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (6 samples)

**Table 10: Summary of Pollutants in Stormwater at E-005 U-T4SW**

<u>Parameter</u>	<u>Average<sup>1</sup></u>	<u>Daily Maximum</u>
Total Organic Carbon (mg/L)	14	27
Oil & Grease (mg/L)	ND <sup>2</sup>	ND
pH, standard units	6.98 (minimum)	8.29
Total Suspended Solids (mg/L)	140	640
Conductivity (µmhos/cm)	340	610

<sup>1</sup> ND values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 10 is ND.

<sup>2</sup> ND values for oil and grease ranged from < 1 to < 5 mg/L (5 samples)

6. **Collection System:** The collection system transports all refinery wastewater, stormwater runoff, and sanitary wastewater to the wastewater treatment plant. As construction of the collection system occurred over many years, the system of piping varies widely in material and age. Piping materials include: concrete, transite, and steel. On an annual basis (typically, before the rainy season), the Discharger indicates that it performs preventative maintenance to ensure that solids are removed to prevent blockages from forming. To accomplish this task, the Discharger utilizes vacuum trucks to capture solids from manhole sediment traps, and catch basins. The Discharger indicates that the collection system easily handles dry weather flows, and additional flows from most storms. During more intense storms, the Discharger indicates that it can (a) lower the sewer system level by increased pumping, and (b) reduce water usage by delaying cooling tower blowdown, tank/vessel draining, draining secondary containment areas, and minimize water usage in the refinery. To determine if the Discharger's current preventative maintenance activities are adequate, this Order includes a provision that requires the Discharger to document spills from its collection system, and past and proposed maintenance.
7. **Wastewater Treatment Units:** The Discharger routes process wastewater to a central pump station (i.e., No. 1 pump station). From this pump station, process wastewater flows to an API oil and water separator that consists of a head channel that feeds four concrete channels. The API Separator uses a chain driven surface skimmer to remove oil and solids. The Discharger pumps this material to Tanks 699 and 700 for additional oil and water separation and recovery. After the API separator, wastewater flows by gravity to four Dissolved Nitrogen Flotation (DNF) units where additional oil and solids are removed. The Discharger also pumps this material to Tanks 699 and 700.

From the DNF units, wastewater is routed through an air stripper where a blower forces air through a grid of perforated tubes. The vapors from the air stripper, DNF units, and API Separator are destroyed in a thermal oxidizer. The Discharger pumps wastewater from the Air Stripper to Surge Pond No. 1 for biotreatment. Surge Pond No. 1 is a 14-acre rectangular basin that is baffled into five sections. The first section is extensively aerated whereas subsequent sections are lightly aerated. To enhance treatment in Surge Pond No. 1, the Discharger adds phosphoric acid, and occasionally specialized bacteria. From Surge Pond No. 1, wastewater flows by gravity to Surge Pond No. 2. Surge Pond No. 2 is an 8-acre rectangular basin that contains two aerators to ensure aerobic conditions near the surface, and functions mainly as a settling basin for biosolids with some biotreatment activity. The Discharger may pump up to 900 gallons per minute of wastewater from Surge Pond No. 2 to the refinery for reuse as industrial water. The remaining wastewater from Surge Pond No. 2 is pumped to the oxpond. The oxpond is about 108 acres with an estimated capacity of 216 million gallons, but typically operates with a volume of around 150 million gallons. The oxpond contains five aerators at the inlet section of the pond to ensure oxygen levels in wastewater are adequate. It passively treats wastewater by providing a retention time of about 30 days.

From the oxpond, the Discharger routes wastewater to two clarifiers that operate in parallel. In the clarifiers, the Discharger adds coagulants and flocculants to enhance settling of wastewater solids. Clarifiers solids are centrifuged, and disposed of offsite. The supernatant from the centrifuge is routed to Surge Pond No. 1. From the clarifiers, wastewater flows through a toothed weir to two filters (Round and Zimpro) that operate in parallel. The Round filter is multimedia (sand and anthracite) and consists of six chambers, while the Zimpro filter is a six-celled trickling sand filter. Both of these filters contain automatic backwash functions that allow them to maintain continuous operation. Backwash water from the filters is routed to Surge Pond No. 1 for treatment, and treated wastewater is routed to 12 Granular Activated Carbon (GAC) columns that operate in pairs (i.e., lead and lag). The Discharger uses GAC columns, as needed, to ensure treated wastewater is not toxic to

aquatic life. Backwash water from the GAC columns is also discharged to Surge Pond No. 1 for further treatment.

After the GAC columns, the Discharger routes wastewater to a 26-acre Coke Pond. The Discharger indicates that the purpose of discharging treated wastewater to the Coke Pond is to (a) provide water for reuse for coke sluicing operations, (b) provide water for reuse in the dust abatement sprinklers, (c) use as backup fire water supply, and (d) to keep water in motion in order to avoid odors from stagnation, and (e) provide additional polishing of final effluent.

From the Coke Pond, the Discharger routes treated wastewater to the Clean Canal. The Clean Canal conveys treated wastewater to a sump containing three pumps that discharge water to the Bay through a deepwater diffuser located near the Avon Wharf. The Clean Canal also receives stormwater runoff, and neutralized demineralizer reject water from the Discharger's water treatment plant.

### **Regional Monitoring Program**

8. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Board staff requested major permit holders in this region, under authority of Section 13267 of California Water Code, to report on the water quality of the estuary. These permit holders, including the Discharger, responded to this request by participating in a collaborative effort, through the San Francisco Estuary Institute. This effort has come to be known as the San Francisco Bay Regional Monitoring Program for Trace Substances. The Discharger has agreed to continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the estuary. The Discharger's participation and support of the RMP is a consideration of the level of receiving water monitoring required by this Order.

### **Applicable Plans, Policies and Regulations**

#### **Basin Plan**

9. On January 21, 2004, the Board adopted Resolution No. R2-2004-0003 amending the Basin Plan to (1) update the dissolved WQOs for metals to be identical to the CTR WQC except for cadmium; (2) to change the Basin Plan definitions of marine, estuarine and freshwater to be consistent with the CTR definitions; (3) to update NPDES implementation provisions to be consistent with *the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Policy, or SIP); (4) to remove settleable matter effluent limitations for POTWs, and other editorial changes. Subsequent to approval by the State Water Resources Control Board (SWRCB) and the Office of Administrative Law (OAL) (July 22, 2004, and October 4, 2004, respectively), the USEPA approved the amendment on January 5, 2005.

#### **Beneficial Uses**

10. Beneficial uses for Suisun Bay and Carquinez Strait, as identified in the Basin Plan, and based on known uses of the receiving waters in the vicinity of the discharge, are:
  - a. Industrial Service Supply
  - b. Navigation
  - c. Water Contact Recreation
  - d. Non-contact Water Recreation
  - e. Commercial and Sport Fishing

- f. Wildlife Habitat
- g. Preservation of Rare and Endangered Species
- h. Fish Migration
- i. Fish Spawning
- j. Estuarine Habitat

#### **State Implementation Policy (SIP)**

11. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the State Implementation Policy or SIP) on March 2, 2000 and the Office of Administrative Law (OAL) approved the SIP on April 28, 2000, and amended it on May 31, 2005. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the federal Clean Water Act. The SIP establishes implementation provisions for priority pollutant criteria promulgated by the USEPA through the National Toxics Rule (NTR) and California Toxics Rule (CTR), and for priority pollutant objectives established by the Regional Water Quality Control Boards in their water quality control plans (basin plans). The SIP also establishes monitoring requirements for Dioxin-TEQ, chronic toxicity control provisions, and Pollutant Minimization Programs. The SIP applies to Waste 001. Wastes 003-005 are exempt from the SIP since they only consist of stormwater runoff.

#### **California Toxics Rule (CTR)**

12. On May 18, 2000, the USEPA published the *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (Federal Register, Volume 65, Number 97, 18 May 2000). These standards are generally referred to as the CTR. The CTR specified water quality criteria (WQC) for numerous pollutants, of which some are applicable to the Discharger's effluent discharges.

#### **Other Regulatory Bases**

13. On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards (WQS) become effective for Clean Water Act (CWA) purposes (40 CFR 131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.
14. This Order contains restrictions on individual pollutants that are no more stringent than required by the federal Clean Water Act. Individual pollutant restrictions consist of technology-based restrictions and water quality-based effluent limitations. The technology-based effluent limitations consist of restrictions on BOD<sub>5</sub>, TSS, COD, oil and grease, phenolic compounds, ammonia, sulfide, total chromium, hexavalent chromium, and pH. Restrictions on these pollutants are specified in federal regulations as discussed in Findings 21, and the permit's technology-based pollutant restrictions are no more stringent than required by the Clean Water Act. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule, the California Toxics Rule is the applicable standard pursuant to 40 C.F.R. 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001, or Basin Plan Provisions approved by



USEPA on May 29, 2000. Most beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 C.F.R. 131.21(c)(1). The remaining water quality objectives and beneficial uses implemented by this Order (specifically [arsenic, chromium, copper (freshwater only), lead, nickel, silver, and zinc]) were approved by USEPA on January 5, 2005, and are applicable water quality standards pursuant to 40 C.F.R. 131.21(c)(2). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the Clean Water Act and the applicable water quality standards for purposes of the Clean Water Act.

15. WQOs/WQC and effluent limitations in this permit are based on the SIP; the plans, policies and WQOs and criteria of the Basin Plan; California Toxics Rule (Federal Register Volume 65, 97); *Quality Criteria for Water* (USEPA 440/5-86-001, 1986 and subsequent amendments, "USEPA Gold Book"); applicable Federal Regulations (40 CFR Parts 122 and 131); the National Toxics Rule (57 FR 60848, 22 December 1992 and 40 CFR Part 131.36(b), "NTR"); NTR Amendment (Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237); USEPA December 10, 1998 "National Recommended Water Quality Criteria" compilation (Federal Register Vol. 63, No. 237, pp. 68354-68364); "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan); and Best Professional Judgment (BPJ) as defined in the Basin Plan. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR 122.44(d) specifies that water quality based effluent limitations (WQBELs) may be set based on USEPA criteria and supplemented where necessary by other relevant information to attain and maintain narrative WQC to fully protect designated beneficial uses. Discussion of the specific bases and rationale for effluent limits are given in the associated Fact Sheet for this Permit, which is incorporated as part of this Order.
16. In addition to the documents listed above, other USEPA guidance documents upon which BPJ was developed may include in part:
  - Region 9 Guidance For NPDES Permit Issuance, February 1994;
  - USEPA Technical Support Document for Water Quality Based Toxics Control (March 1991) (TSD);
  - Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993;
  - Whole Effluent Toxicity (WET) Control Policy, July 1994;
  - National Policy Regarding Whole Effluent Toxicity Enforcement, August 14, 1995;
  - Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods, April 10, 1996;
  - Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Programs Final, May 31, 1996;
  - Draft Whole Effluent Toxicity (WET) Implementation Strategy, February 19, 1997.

## **Basis for Effluent Limitations**

### **General Basis**

17. *Federal Water Pollution Control Act*. Effluent limitations and toxic effluent standards are established pursuant to sections 301 through 305, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharges herein.



Applicable Water Quality Objectives/Criteria

18. The WQO and WQC applicable to the receiving waters for this discharge are from the Basin Plan, the CTR, and the NTR.
- a. The Basin Plan includes numeric objectives for mercury and cadmium, and narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The narrative toxicity objective states in part, "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states in part, "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered." Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.
  - b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as here, except that where the Basin Plan's Tables 3-3 and 3-4 specify numeric objectives for certain of these priority toxic pollutants, the Basin Plan's numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).
  - c. The NTR established numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 34 toxic organic pollutants for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. This includes the receiving waters for this Discharger.
19. ***Basin Plan Receiving Water Salinity Definitions.*** The Basin Plan states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable WQC. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than one ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria (the latter calculated based on ambient hardness), for each substance.

Receiving Water Salinity and Hardness

20. a. Salinity. The receiving water for the subject discharge is Suisun Bay, which is a tidally influenced waterbody, with significant fresh water inflows during the wet weather season. Suisun Bay is specifically defined as estuarine under the Basin Plan salinity definition. Therefore, the effluent limitations specified in this Order for discharges to Suisun Bay are based on the lower of the marine and freshwater Basin Plan WQOs and CTR and NTR WQC.
- b. Hardness. Some WQOs and WQC are hardness dependent. Hardness data collected through the RMP are available for water bodies in the San Francisco Bay Region. In determining the WQOs and WQC for this Order, the Board used a hardness of 46 mg/L, which is the minimum hardness at the Pacheco River Station observed from 1993-2001. This represents the best available information for hardness of the receiving water after it has mixed with the discharge.

Technology-Based Effluent Limits

21. The refinery is classified as a “cracking refinery” as defined by the USEPA in 40 CFR § 419.20. Therefore, the USEPA Effluent Guidelines and Standards for Petroleum Refining Point Sources (40 CFR § 419 Subpart B) based on Best Available Technology Economically Achievable (BAT), Best Practicable Control Technology (BPT), and/or Best Conventional Pollutant Control technology (BCT), whichever are more stringent, are applicable to the discharge. The application of these guidelines and standards is based on production rates at the refinery. The effluent limitations in this Permit are based on facility production rates from 2003. A detailed description of the methodology and data used to calculate the technology-based effluent limitations is included in Attachment A to the Fact Sheet.

Water Quality-Based Effluent Limitations

22. Toxic substances in outfall 001 are regulated by WQBELs derived from water quality objectives listed in the Basin Plan Tables 3-3 and 3-4, the NTR, USEPA recommended criteria, the CTR, the SIP, and/or BPJ. WQBELs in this Order are revised and updated from the limits in the previous Order and their presence in this Order is based on evaluation of the Discharger’s data as described below under Reasonable Potential Analysis (RPA). Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP. If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given in the associated Fact Sheet.

Receiving Water Ambient Background Data used in Calculating WQBELs

23. The receiving waters for the discharges are estuarine and subject to complex tidal and riverine currents. Therefore, the most representative location of ambient background data for this facility is the Central Bay. WQBELs were calculated using RMP data from 1993 through 2001 for the Yerba Buena Island RMP station. However, not all the constituents listed in the CTR were analyzed by the RMP during this time. By letter dated August 6, 2001, the Board’s Executive Officer addressed this data gap by requiring the Discharger to conduct additional monitoring pursuant to section 13267 of the California Water Code.

Constituents Identified in the 303(d) List

24. On May 12, 1999, the USEPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 303(d) list) was prepared in accordance with Section 303(d) of the federal Clean Water Act to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed as an impaired waterbody. The pollutants impairing Suisun Bay include mercury, nickel, selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. Suisun Bay is also impaired by exotic species.

Dilution and Assimilative Capacity

25. In response to the SWRCB’s Order No. 2001-06, Board staff has evaluated the assimilative capacity of the receiving water for 303(d) listed pollutants for which the Discharger has reasonable potential in its discharges. The evaluation included a review of RMP data (local and Central Bay stations), effluent data, and WQOs/WQC. From this evaluation, it is determined that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, “dilution credit may be limited or denied on a pollutant-by-pollutant basis...”

- a. For certain bioaccumulative pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. This determination is based on available data on concentrations of these pollutants in aquatic organisms, sediment, and the water column. The Board placed selenium, mercury, and PCBs on the CWA Section 303(d) list. The USEPA added dioxins and furans compounds, chlordane, dieldrin, and 4,4'-DDT on the CWA Section 303(d) list. Dilution credit is not included for the following pollutants: mercury, selenium, PCBs, and dioxins and furans. The following factors suggest that there is no more assimilative capacity in the Bay for these pollutants.
  - i. San Francisco Bay fish tissue data shows that these pollutants, except for selenium, exceed screening levels. The fish tissue data are contained in "Contaminant Concentrations in Fish from San Francisco Bay 1997" May 1997. Denial of dilution credits for these pollutants is further justified by fish advisories to the San Francisco Bay. The Office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, "Contaminated Levels in Fish Tissue from San Francisco Bay." The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issued an interim consumption advisory covering certain fish species from the bay in December 1994. This interim consumption advice was issued and is still in effect due to health concerns based on exposure to sport fish from the bay contaminated with mercury, PCBs, dioxins, and pesticides (e.g., DDT).
  - ii. For selenium, the denial of dilution credits is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990). These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. Additionally, in 1987 the Office of Environmental Health Hazard Assessment issued an advisory for the consumption of two species of diving ducks in the north bay found to have high tissue levels of selenium. This advisory is still in effect.
- b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loading limits should be limited to current levels. The Board finds that mass loading limits are warranted for certain bioaccumulative compounds on the 303(d) list for the receiving waters of this Discharger. This is to ensure that this Discharger does not contribute further to impairment of the narrative objective for bioaccumulation.
- c. As mentioned in an earlier finding, the discharge of Waste 001 is through a deepwater diffuser to Suisun Bay. The Discharger performed a dilution study in the early 1990s that supposedly documented that the diffuser achieves a minimum dilution of at least 10:1; however, the results of this study appear to be lost. In order to confirm that the Discharger's diffuser achieves at least 10:1, this Order includes a provision that requires it to either (1) provide a copy of the previous study, or (2) propose a new dilution study. To address uncertainties with mixing (discussed below) and to protect beneficial uses of the Bay, this Order limits the dilution credit for Waste 001 for nonbioaccumulative constituents to 10:1. Limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for limiting the dilution credit.
  - i. A far-field background station is appropriate because the receiving waterbody (Bay) is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.

- ii. Due to the complex hydrology of the San Francisco Bay, a mixing zone cannot be accurately established.
- iii. Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
- iv. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, silver, nickel and lead).

The main justification for limiting dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The basis for using 10:1 is that it was granted in the previous permit. This 10:1 limit is also based on the Basin Plan's prohibition number 1, which prohibits discharges like Waste 001 with less than 10:1. Since the discharge of Waste 001 is required to achieve at least 10:1, it is appropriate to grant 10:1 at this time. The detailed rationale is described in the Fact Sheet.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

- 26. Based on the 303(d) list of pollutants impairing Suisun Bay, the Board plans to adopt TMDLs for these pollutants no later than 2010, with the exception of dioxin and furan compounds. For dioxins and furans, the Board intends to consider this matter further after the USEPA completes its national health reassessment. Future reviews of the 303(d) list for Suisun Bay may result in revision of the proposed schedules; provide schedules for other pollutants, or both.
- 27. The TMDLs will establish WLAs and load allocations for point sources and non-point sources, respectively, and will result in achieving the water quality standards for the waterbody. The final effluent limitations for this Discharger will be based on WLAs that are derived from the TMDLs.
- 28. *Compliance Schedules.* Pursuant to Section 2.1.1 of the SIP, "the compliance schedule provisions for the development and adoption of a TMDL only apply when: (a) the Discharger requests and demonstrates that it is infeasible for the Discharger to achieve immediate compliance with a CTR criterion; and (b) the Discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the Discharger's contribution to current loadings and the Discharger's ability to participate in TMDL development." As further described in a later finding under the heading **Interim Limits and Compliance Schedules**, the Discharger by letter dated February 11, 2005, demonstrated that it is infeasible to achieve compliance for certain pollutants.
- 29. The following summarizes the Board's strategy to collect water quality data and to develop TMDLs:
  - a. Data collection – The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or WQOs/WQC. The Board will require dischargers to characterize the pollutant loads from their facilities into the water-quality limited waterbodies. The results will be used in the development of TMDLs, but may also be used to update/revise the 303(d) list and/or change the WQOs/WQC for the impaired waterbodies including Carquinez Strait and Suisun Bay.
  - b. Funding mechanism – The Board has received, and anticipates continued receipt of, resources from federal and state agencies for the development of TMDLs. To ensure timely development



of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through Water Quality Attainment Strategies (referenced in a previous finding) or other appropriate funding mechanisms.

Interim Limits and Compliance Schedules

30. Until final WQBELs or WLAs are adopted, state and federal antibacksliding and antidegradation policies, and the SIP, require that the Board include interim effluent limitations. The interim effluent limitations will be the lower of the following:

- current performance; or
- previous order's limits

This permit establishes interim performance-based limits in addition to interim concentration limits to limit the discharge of certain 303(d)-listed bioaccumulative pollutants' mass loads to their current levels. These interim performance-based mass limits are based on recent discharge data. Where pollutants have existing high detection limits, interim mass limits are not established because meaningful performance-based mass limits cannot be calculated for pollutants with non-detectable concentrations. However, the Discharger has the option to investigate alternative analytical procedures that result in lower detection limits, either through participation in new RMP special studies or through equivalent studies conducted jointly with other dischargers.

31. Compliance schedules are established based on Section 2.2 of the SIP for limits derived from CTR WQC or based on the Basin Plan for limits derived from the Basin Plan WQOs. If an existing Discharger cannot immediately comply with a new and more stringent effluent limitation, the SIP and the Basin Plan authorize a compliance schedule in the permit. To qualify for a compliance schedule, both the SIP and the Basin Plan require that the Discharger demonstrate that it is infeasible to achieve immediate compliance with the new limit. The SIP and Basin Plan require that the following information be submitted to the Board to support a finding of infeasibility:
- i. documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
  - ii. documentation of source control and/or pollution minimization efforts currently under way or completed;
  - iii. a proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
  - iv. a demonstration that the proposed schedule is as short as practicable.
32. ***Infeasibility to Comply Reports for E-001:*** The Discharger submitted infeasibility to comply reports for E-001, dated February 11, 2005, for selenium, dioxin (Dioxin TEQ), and cyanide. Board staff performed a statistical analysis to determine if it is infeasible for the Discharger to comply with final WQBELs for these pollutants. Based on this analysis, the Board confirms the Discharger's assertion of infeasibility. The Fact Sheet contains the details of this analysis.
33. The demonstration of infeasibility for cyanide, selenium, and Dioxin-TEQ complies with the Basin Plan, Chapter 4. This Order establishes compliance schedules for these pollutants that extend beyond 1 year. Pursuant to 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control the pollutants. This Order establishes interim limits for these pollutants based on the previous permit limits or existing plant performance, whichever is more stringent. Specific basis for these interim limits are described in the following findings for each pollutant.

Antidegradation and Antibacksliding

34. The limitations in this Order comply with the prohibition contained in Clean Water Act Section 402(o) against establishment of less stringent WQBELs (antibacksliding) because:
- a) For impairing pollutants, the revised final limitations will be consistent with TMDLs and WLAs, once they are established;
  - b) For non-impairing pollutants, the final limitations are or will be consistent with current State WQOs/WQCs;
  - c) Antibacksliding does not apply to interim limitations established under previous Orders;
  - d) If antibacksliding policies apply under 402(o)(2)(C), a less stringent limitation is necessary because of events over which the Discharger has no control, and for which there is no reasonable available remedy;
  - e) If antibacksliding policies apply, under 402(o)(2)(E), the permittee has installed the treatment facilities required to meet the effluent limitations and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations; or
  - f) If antibacksliding policies apply, under 402(o)(2)(B)(i) new information is available that was not available during previous permit issuance.

The IPBLs in this Order comply with antidegradation requirements and meet the requirements of the SIP because they hold the Discharger to performance levels that will not cause or contribute to water quality impairment or further water quality degradation. The pollutant-specific discussions below and in the attached Fact Sheet contain more detailed discussions of antidegradation and antibacksliding, where appropriate.

**Specific Basis**

Reasonable Potential Analysis

35. As specified in 40 CFR 122.44(d) (1) (i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard." Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the effluent data to determine if discharges from outfall 001 have a reasonable potential to cause or contribute to an excursion above a State water quality standard ("Reasonable Potential Analysis" or "RPA"). For all parameters that have reasonable potential, numeric WQBELs are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQC from the NTR, and the CTR.
36. *RPA Methodology.* The method for determining RPA involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents subject to the SIP is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.
- a. The first trigger is activated when the MEC is greater than or equal to the lowest applicable WQO/WQC, which has been adjusted for pH, hardness (for freshwater WQO/WQC only), and translator data, if appropriate. If the MEC is greater than the adjusted WQO/WQC, then that pollutant has Reasonable Potential and a WQBEL is required.



- b. The second trigger is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQO/WQC ( $B > WQO/WQC$ ), and the pollutant is detected in the effluent:
  - c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO/WQC, or effluent and background data are unavailable or insufficient (e.g., all nondetects). A limit is only required under certain circumstances to protect beneficial uses.
37. *RPA Determinations:* The MECs, WQOs/WQC, bases for the WQOs/WQC, background concentrations used, and Reasonable Potential conclusions from the RPA are listed in Table 11 for all constituents analyzed. The RPA results for some of the constituents in the CTR were not determined because of the lack of objectives/criteria or effluent data. Further details on the RPA can be found in the Fact Sheet.
38. *Summary of RPA Data and Results.* The RPA was based on effluent monitoring data from January 2001 through August 2004. Based on the RPA methodology summarized above, the following constituents have been found to have reasonable potential to cause or contribute to an excursion above WQOs/WQC: copper, lead, mercury, nickel, selenium, thallium, cyanide, 2,3,7,8 – Dioxin TEQ; and PCBs. Based on the RPA, WQBELs are required to be included in the permit for these constituents.
39. *RPA Determinations.* The maximum effluent concentrations (MEC), WQOs, bases for the WQOs, background concentrations used and reasonable potential conclusions from the RPA are listed in the following table.

**Table 11: E-001-Summary of Reasonable Potential Analysis Results**

CTR #	Constituent <sup>1</sup>	WQO/ WQC (µg/L)	Basis <sup>2</sup>	MEC outfall 001 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type) <sup>4</sup>
2	Arsenic	36	BP, sw	10	2.46	No
4	Cadmium	1.34	BP, fw	<0.1	0.1268	No
5b	Chromium(VI)	11	BP, fw	2.0	4.4	No
6	Copper	3.7	CTR, sw, T=0.83 <sup>3</sup>	20	2.45	Yes (1)
7	Lead	1.2	BP, fw	3.5	0.8	Yes (1)
8	Mercury*	0.025	BP, fw	0.0375	0.0086	Yes (1)
9	Nickel*	7.1	BP, sw	87	3.7	Yes (1)
10	Selenium*	5.0	NTR, fw	41	0.39	Yes (1)
11	Silver	1.1	BP, fw	0.05	0.0683	No
12	Thallium	6.3	CTR, hh	13	0.21	Yes (1)
13	Zinc	62	BP, fw	26	4.4	No
14	Cyanide	1	NTR, sw	14	<0.4	Yes (1)
16	2,3,7,8 TCDD	$1.4 \times 10^{-8}$	CTR, hh	$<3.6 \times 10^{-7}$	$<3.5 \times 10^{-7}$	No
	Dioxin TEQ*	$1.4 \times 10^{-8}$	BP, nar	$4.2 \times 10^{-7}$	$7.1 \times 10^{-8}$	BPJ

CTR #	Constituent <sup>1</sup>	WQO/ WQC (µg/L)	Basis <sup>2</sup>	MEC outfall 001 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type) <sup>4</sup>
19	Benzene	71	CTR, hh	<0.5	<0.05	No
53	Pentachlorophenol	7.9	CTR, sw	<1	<1	No
60	Benzo(a)Anthracene	0.049	CTR, hh	<0.1	0.0053	UD
61	Benzo(a)Pyrene	0.049	CTR, hh	<0.1	0.00029	UD
62	Benzo(b)Fluoranthene	0.049	CTR, hh	<0.1	0.0046	UD
64	Benzo(k)Fluoranthene	0.049	CTR, hh	<0.05	0.0015	UD
73	Chrysene	0.049	CTR, hh	<0.1	0.0024	UD
74	Dibenzo(a,h)Anthracene	0.049	CTR, hh	<0.1	0.00064	UD
88	Hexachlorobenzene	0.00077	CTR, hh	<1	0.0000202	UD
92	Indeno(1,2,3-cd)Pyrene	0.049	CTR, hh	<0.1	0.004	UD
102	Aldrin	0.00014	CTR, hh	<0.01	Not available	UD
103	Alpha-BHC	0.013	CTR, hh	<0.01	0.000496	No
104	Gamma-BHC	0.046	CTR, hh	<0.01	0.000413	No
105	Delta-BHC	0.063	CTR, hh	<0.01	0.000703	No
107	Chlordane	0.00059	CTR, hh	<0.02	0.00018	UD
108	4,4-DDT	0.00059	CTR, hh	<0.01	0.000066	UD
109	4,4-DDE*	0.00059	CTR, hh	<0.01	0.000693	No
111	Dieldrin*	0.00014	CTR, hh	<0.01	0.000264	No
112	Alpha-Endosulfan	0.0087	CTR, sw	<0.01	0.000069	UD
113	Beta-Endosulfan	0.0087	CTR, sw	<0.01	0.0000819	UD
115	Endrin	0.0023	CTR, sw	<0.01	0.000036	UD
117	Heptachlor	0.00021	CTR, hh	<0.01	0.000019	UD
118	Heptachlor Expoxide	0.00011	CTR, hh	<0.01	0.000094	UD
119-25	PCBs (Sum)*	0.00017	CTR, hh	0.000148	Not available	Yes (3)
126	Toxaphene	0.0002	CTR, sw	<0.5	Not available	UD
	Total PAHs	15	BP, sw	<0.1	0.26	No
	CTR #s 1, 3, 5a, 15, 17-126 except, 19, 53, 60-62, 64, 73, 74, 88, 92, 102-105, 107-109, 111-113, 115, and 117-126	Various or NA	CTR	Non-detect, less than WQC, or no WQC	Less than WQC or Not Available	No or Undetermined <sup>5</sup>

- \* = Constituents on 303(d) list, applies WHO 1998 to Toxicity Equivalent Factors (TEQ) of 2,3,7,8-TCDD.
- RPA based on the following: Hardness (H) is based on the lowest ambient hardness, 46 in mg/L as CaCO<sub>3</sub>; BP = Basin Plan; CTR = California Toxics Rule; NTR=National Toxics Rule; fw = freshwater; sw = saltwater; nar = narrative, T = translator to convert dissolved to total copper.
- Translators are based on the CTR.
- See Finding 36 for the definition of the three RPA triggers, and Finding 42 for Dioxin TEQ.
- Undetermined due to lack of objectives/criteria, and/or lack of effluent data (See Fact Sheet Table for full RPA results).

40. *RPA Results for Impairing Pollutants.* While TMDLs and WLAs are being developed, effluent concentration limits are established in this permit for 303(d) listed pollutants that have reasonable potential to cause or contribute to an excursion above the water quality standard. In addition, mass

limits are required for bioaccumulative 303(d) –listed pollutants that can be reliably detected. Constituents on the 303(d) list for which the RPA determined a need for effluent limitations are nickel, mercury, selenium, PCBs, and dioxin TEQ.

#### Interim Limits with Compliance Schedules

41. The Discharger has demonstrated infeasibility to meet the WQBELs calculated, according to Chapter 4 of the Basin Plan [Section (f) Compliance Schedules, under Implementation of Effluent Limitations] for cyanide, selenium, and dioxin (Dioxin TEQ). In accordance with the Basin Plan, this Order establishes compliance schedules for these pollutants, because application of the SIP procedures for calculating effluent limits have resulted in more stringent limits for these pollutants. As allowed by the Basin Plan, this Order establishes a 10-year compliance schedule from the effective date of the SIP. For limits based on Basin Plan narrative WQOs (i.e., dioxin TEQ), this Order establishes a compliance schedule of ten years from when the limit was first imposed.

#### Specific Pollutants

42. *Dioxin TEQ.*

- (1) The CTR establishes a numeric human health WQC of 0.014 picograms per liter (pg/l) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms. The discharge does not have reasonable potential for this compound based on all nondetects. However, the preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have reasonable potential with respect to narrative criteria. The preamble further states that USEPA intends to use the 1998 World Health Organization Toxicity Equivalence Factor (TEF)<sup>2</sup> scheme in the future and encourages California to use this scheme in State programs. Additionally, the CTR preamble states USEPA's intent to adopt revised water quality criteria guidance subsequent to their health reassessment for dioxin-like compounds.
- (2) The Basin Plan contains a narrative WQO for bio-accumulative substances:  
"Many pollutants can accumulate on particulates, in sediments, or bio-accumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

This narrative WQO applies to dioxin and furan compounds, based in part on the scientific community's consensus that these compounds associate with particulates, accumulate in sediments, and bio-accumulate in the fatty tissue of fish and other organisms.

- (3) The USEPA's 303(d) listing determined that the narrative objective for bio-accumulative pollutants was not met because of the levels of dioxins and furans in fish tissue.
- (4) Dioxins and furans are found in catalytic reforming wastewaters, and stormwater runoff at the refinery. As shown in Table 11 the maximum effluent concentration, and ambient receiving water quality data provided in the May 15, 2003, BACWA report show Dioxin TEQ exceeding the WQC; therefore, there is Reasonable Potential for Dioxin TEQ.

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<sup>2</sup> The 1998 WHO scheme includes TEFs for dioxin-like PCBs. Since dioxin-like PCBs are already included within "Total PCBs", for which the CTR has established a specific standard, dioxin-like PCBs are not included in this Order's version of the TEF scheme.

43. *Polychlorinated Biphenyl (PCBs)*. In support of the Board's TMDL development for PCBs, the San Francisco Estuary Institute measured PCB congeners in Bay Area refinery discharges using sensitive analytical techniques with large sample volumes to achieve low detection limits. It published the results of these analyses in *Polychlorinated Biphenyls in Northern San Francisco Estuary Refinery Effluents*, dated September 10, 2002, which indicates that Tesoro's effluent contained total PCBs ranging from 109 to 148 pg/L. The methodology described above has not been approved by USEPA, and therefore, cannot be used for compliance purposes. The only known historical presence of PCBs at the site was sealed electrical transformers and there is no physical, written, or anecdotal evidence that transformers containing oil with PCBs ever leaked to ground surfaces within the facility. However, in the previous Order, the Board determined that there is reasonable potential for PCBs and the results from the above analysis suggest there may be reasonable potential. This reasonable potential is based on:

- The historical presence of PCBs at the facility;
- The San Francisco Estuary Institute's detection of PCBs close to the WQC (described above);
- The detection limits for PCBs using approved USEPA methods are above the WQC, thus, PCBs may be discharged at a level below the detection limits but above WQC; and
- PCBs are persistent bioaccumulative toxicants that have impaired the receiving waterbody. In addition, the PCBs have been included in the 303(d) listing because of high fish tissue levels.<sup>3</sup>

Since it is infeasible to comply with final WQBELs for PCBs because the detection limit of analytical methods approved by USEPA are too high, this Order includes interim limits that are based on the previous permit.

44. *Polynuclear Aromatic Hydrocarbons (PAHs)*. The RPA was conducted on individual and total PAHs, as required by the SIP, CTR, and Basin Plan. No PAHs have been detected in the effluent. However, for some PAHs, the detection levels achieved by the Discharger are above the applicable WQC. While the previous Order included a total PAHs limit, this Order does not find that reasonable potential exists for total or individual PAHs. This finding is consistent with State Water Resources Control Board Order WQO 2002-0011 (i.e., there is not sufficient evidence to suggest that these pollutants have the potential to exhibit reasonable potential even though detection limits are above the WQC).

45. *Silver, Pentachlorophenol, Alpha-BHC, Beta-BHC, and Gamma-BHC*. The previous Order contained effluent limits for these pollutants. As indicated in an earlier finding, these constituents do not have a reasonable potential to cause an exceedance of their respective WQC. Accordingly, this Order does not propose to include effluent limitations for these constituents.

46. *Endosulfan, Hexachlorobenzene, Aldrin, Endrin, Chlordane, 4,4 DDT, Heptachlor, Heptachlor Epoxide, Toxaphene, and Tributyltin*. The previous Order contained effluent limits for these pollutants. As indicated in an earlier finding, it was not possible to determine whether these constituents have reasonable potential to cause an exceedance of their respective WQC because detection limits were too high. In order to be consistent with State Water Resources Control Board Order WQO 2002-0011, this Order does not include effluent limits for these pollutants (i.e., there is not sufficient evidence to suggest that these pollutants have the potential to exhibit reasonable potential even though detection limits are above the WQC).

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<sup>3</sup> Contaminant Levels in Fish Tissue from San Francisco Bay, San Francisco Regional Water Quality Control Board (June 1997).



47. *Other organics.* Self-monitoring data indicate that from 2001 to 2004, the Discharger sampled for all organic pollutants. This data set was used to perform the RPA for organic pollutants. The Discharger is required to continue monitoring its effluent for priority pollutants under the requirement of Provision D.5. Upon completion of the monitoring, the Board may re-evaluate the RPA and determine if WQBELs are required.
48. *Effluent Monitoring.* This Order does not include effluent limitations for constituents that do not show reasonable potential, but continued monitoring for these pollutants is required as described in the August 6, 2001 letter, which is further described in a later finding. If concentrations of these constituents increase significantly the Discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in reasonable potential to cause or contribute to an excursion above the applicable WQO/WQC.
49. *Permit Reopener.* The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

#### **Dioxin TEQ Compliance History**

50. *Dioxin TEQ Compliance History.* Historically, the Discharger violated the Dioxin TEQ limitation of 0.14 picogram per liter (pg/l) contained in Order No. 93-068. To address these violations, the Board issued Cease and Desist Order (CDO) No. 95-151. The CDO required the Discharger to investigate the causes of dioxins and furans violations, and develop and study treatment technologies to comply with the limitation.
51. *Causes of High Dioxin TEQ Levels.* The Discharger investigated the causes of the violations, and concluded that the primary causes are related to atmospheric deposition from diffuse sources. As mentioned in Finding No. 7, the Discharger routes treated wastewater from its GAC columns to a 26-acre Coke Pond (subject to atmospheric deposition). The other main source of dioxins and furans is stormwater runoff that combines with treated wastewater in the "Clean Canal" before it reaches the Discharger's compliance point. Since dioxins and furans bind to solids, the Discharger determined the most cost-effective way to reduce concentrations discharged to the Bay was to control solids resuspension in the "Clean Canal". In order to do so, the Discharger removed aerators and obstructions in the "Clean Canal". This reduced the concentrations of dioxins and furans from a maximum value of 13 pg/l TEQ prior to the 1995 CDO, to consistently less than 0.5 pg/l TEQ since 1998.
52. Order No. 00-056 found that a new limitation for dioxins and furans was needed because the value of 0.14 pg/l TEQ prescribed by Order No. 00-011 was not appropriate for the Discharger for the following reasons:
- The Discharger reduced dioxins and furans in its discharge by 85 percent since adoption of the 1995 CDO. Despite these reductions, the Discharger cannot comply with a limit of 0.14 pg/L. The root causes of dioxin TEQ violations (i.e., atmospheric deposition) are not within the Discharger's control, and the next step of treatment will be overly burdensome, and not cost effective relative to the benefits. Since the Discharger's mass contribution is minor compared to other stormwater inputs to the Bay, the cost for further reduction seems overly burdensome.
  - The U.S. EPA's 303(d) listing highlights the need for a region wide cross media assessment of the problem. This integrated assessment should result in a more balanced, and more effective limitation for the Discharger.

53. *Calculation of Dioxin TEQ Limit in Order No. 00-056:* The limit for dioxin and furans prescribed in Order No. 00-056 is based on facility performance. Although dioxins and furans are bioaccumulative, Order No. 00-056 based the dioxins and furans limit on concentration instead of mass. This is because stormwater is a significant percentage of the dioxins and furans in the discharge, and the discharge flow rate is highly influenced by runoff (as much as 200 percent). In calculating a performance-based limit for dioxin and furans, Order No. 00-056 based it on five of the compounds: 1,2,3,4,6,7,8-hepta CDD, octa-CDD, 1,2,3,4,6,7,8-hepta CDF, 1,2,3,4,7,8,9-hepta CDF, and octa-CDF. This is because the other 12 compounds were always below the detection limit, and therefore, cannot be used to calculate meaningful performance-based limits. This approach of limiting a subset of parameters to control the whole set is based on the concept of indicator parameters. USEPA relies heavily on this approach in establishing technology based effluent limitations that are based on performance. Order No. 00-056 included an interim limit of 0.65 pg/l based on the mean plus 3 standard deviations. Although Order No. 00-056 did not include a specific performance limit for the other 12 compounds, the likelihood that the Discharger will increase its discharge of those compounds is not great. As added assurance that because a decline in performance for the 12 would be associated with increases in the levels of the 5 that are limited, Order No. 00-056 required that the Discharger accelerate monitoring if it detects any of the other 12 compounds. As described in the Fact Sheet for this current Order, the Discharger accelerated monitoring once in the past five years to comply with this requirement. This monitoring effort documented that the Discharger's performance had not declined. To ensure that the Discharger addresses potential declines in performance, this Order includes this same requirement for accelerated monitoring.

#### **Development of Effluent Limitations for E-001**

##### **54. Copper**

- a) *Copper WQC.* The saltwater criteria for copper in the adopted CTR are 3.1 µg/L for chronic protection and 4.8 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 USEPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion*, describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator, translated criteria of 3.7 µg/L for chronic protection and 5.8 µg/L for acute protection were used to calculate effluent limitations.
- b) *RPA Results.* This Order establishes effluent limitations for copper because the 20 µg/L MEC exceeds the governing WQC of 3.7 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *Water Quality Based Effluent Limitations.* The copper WQBELs calculated according to SIP procedures are 24 µg/L as the MDEL, and 13 µg/L as the AMEL.
- d) *Discharger Performance and Attainability.* Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the Board determines that it is feasible for the Discharger to comply with final WQBELs for copper (see Fact Sheet for detailed results of statistical analysis). During the period from January 2001 through July 2004, all effluent copper concentrations were below the 24 µg/L MDEL (range from 0.8 µg/L to 20 µg/L, 112 samples).



- e) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied, since the final WQBEL is more stringent than the previous permit limit.

55. *Lead*

- a) *Lead WQOs*. The Basin Plan contains freshwater WQOs for lead 1.2 µg/L as a four-day average, and 30 µg/L as a 1-hour average, as calculated using the receiving water hardness value of 46 mg/L, as CaCO<sub>3</sub>.
- b) *RPA Results*. This Order establishes effluent limitations for lead because the 3.5 µg/L MEC exceeds the governing WQO of 1.2 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *WQBELs*. The lead WQBELs calculated according to SIP procedures are 7.8 µg/L as the MDEL and 3.7 µg/L as the AMEL.
- d) *Discharger Performance and Attainability*. Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the Board determines that it is feasible for the Discharger to comply with final WQBELs for lead (see Fact Sheet for detailed results of statistical analysis). During the period from January 2001 through July 2004, all effluent lead concentrations were below the 7.8 µg/L MDEL (range from 0.46 µg/L to 3.5 µg/L, 24 samples).
- e) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied, since the final WQBEL is more stringent than the previous permit limit.

56. *Mercury*

- a) *Mercury WQOs/WQC*. Both the Basin Plan and the CTR include objectives and criteria that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.
- b) *RPA Results*. This Order establishes effluent limitations for mercury because the 0.2 µg/L MEC exceeds the governing WQO of 0.025 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *WQBELs*. The mercury WQBELs calculated according to SIP procedures are 0.044 µg/L as the MDEL and 0.019 µg/L as the AMEL.
- d) *Discharger Performance and Attainability*. Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the Board determines that it is feasible for the Discharger to comply with final WQBELs for mercury (see Fact Sheet for detailed results of statistical analysis). During the period from January 2001 through July 2004, all effluent mercury concentrations were below the 0.044 µg/L MDEL (range from 0.0005 µg/L to 0.04 µg/L, 43 samples).
- e) *Expected Final Mercury Limitations*. The final mercury WQBELs will be revised to be consistent with the WLA assigned in the adopted mercury TMDL. In order to maintain current ambient receiving water conditions while the TMDL is being developed, the Discharger must comply with the limitations contained in this Order.

- f) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied, since the final WQBEL and interim mass limit are both more stringent than the previous permit.

57. *Nickel*

- a) *Nickel WQOs*. The saltwater criteria for nickel in the adopted CTR are 8.2 µg/L for chronic protection and 74 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 USEPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion*, describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator, translated criteria of 8.3 µg/L for chronic protection and 75 µg/L for acute protection were used to calculate effluent limitations.
- b) *RPA Results*. This Order establishes effluent limitations for nickel because the 87 µg/L MEC exceeds the governing WQO of 8.3 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *WQBELs*. The nickel WQBELs calculated according to SIP procedures are 77 µg/L as the MDEL and 42 µg/L as the AMEL.
- d) *Discharger Performance and Attainability*. Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the Board determines that it is feasible for the Discharger to comply with final WQBELs for nickel (see Fact Sheet for detailed results of statistical analysis). During the period from January 2001 through July 2004, all effluent nickel concentrations (except for one) were below the 77 µg/L MDEL (range from < 0.5 µg/L to 87 µg/L, 180 samples).
- e) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied because the calculated WQBELs are more stringent than the previous permit. Though the previous limit of 53 µg/L is numerically more stringent than the calculated MDEL of 77 µg/L, the pair of AMEL/MDEL is statistically more stringent than the single daily maximum limit.

58. *Selenium*

- a) *Selenium WQC*. Selenium WQC were promulgated in the NTR for specific waters, which include Suisun Bay. The NTR established a Criterion Chronic Concentration (CCC) for the protection of aquatic life of 5 µg/L and a Criterion Maximum Concentration (CMC) for the protection of aquatic life of 20 µg/L.
- b) *RPA Results*. The 41 µg/L MEC exceeds the governing WQC of 5 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *Concentration-based WQBELs*. The selenium WQBELs calculated according to SIP procedures are 7.8 µg/L as the MDEL and 4.2 µg/L as the AMEL.
- d) *Immediate Compliance Infeasible*. The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the

Board determines that the assertion of infeasibility is substantiated for selenium (see Fact Sheet for detailed results of statistical analysis).

- e) *IPBEL*. Because it is infeasible for the Discharger to immediately comply with the cyanide WQBELs, an interim limitation is required. The Board considered self-monitoring data from January 2001 through July 2004 (selenium concentrations ranged from  $< 1 \mu\text{g/L}$  to  $41 \mu\text{g/L}$ ) to develop an interim performance based limit. However, selenium data did not fit a normal distribution, and therefore, it was not possible to perform a meaningful statistical evaluation of current treatment performance. The previous permit included a WQBEL of  $50 \mu\text{g/L}$  as a daily maximum. Therefore, the previous permit limitation of  $50 \mu\text{g/L}$  is established in this Order as the interim limitation, expressed as a daily maximum limitation.
- f) *Development of Previous Permit Limitation*. On February 20, 1991, and June 19, 1991, the Board adopted Order Nos. 91-026 and 91-099, respectively, amending the NPDES permits for all six refineries in the region, including the Discharger, to add concentration and mass emission limitations for selenium. Order No. 91-026 specified a limit of  $50 \mu\text{g/L}$  as a daily maximum limit. Order No. 91-099 specified a limit of 1.0 lb/day as a running annual average by December 12, 1993. On October 16, 1992, the Western States Petroleum Association (WSPA) filed a Petition with the Superior Court for the County of Solano on behalf of the six oil refineries seeking to set aside Order Nos. 91-026 and 91-099. On January 19, 1994, the Board adopted Resolution No. 94-016, which approved a Settlement Agreement between WSPA and the Board. The Settlement Agreement adopted the limits included in Orders 91-026 and 91-099. The previous Order includes the daily maximum concentration limit of  $50 \mu\text{g/L}$  and a more stringent annual average mass emission limit of 1.0 lb/day.
- g) *Discharger's Performance and Attainability*. During the period January 2001 through July 2004, the Discharger's effluent concentrations were below the interim limitation of  $50 \mu\text{g/L}$  (range from  $< 1 \mu\text{g/L}$  to  $41 \mu\text{g/L}$ , 180 samples); therefore, it is expected that the Discharger can comply with the interim limitation for selenium.
- h) *Term of IPBEL*. The selenium interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.
- i) *Selenium Source Control Strategy*. As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must conduct selenium source control strategies, as required by Provision D.7 of this Order.
- j) *Expected Final Selenium Limitations*. The final selenium WQBELs will be revised to be consistent with the WLA assigned in the adopted selenium TMDL. While the TMDL is being developed, the Discharger will comply with the performance-based selenium concentration limitation to cooperate in maintaining current ambient receiving water conditions.
- k) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.

## 59. Thallium

- a) *Thallium WQOs*. The CTR specifies a long-term average criterion for protection of human health of 6.3 µg/L.
- b) *RPA Results*. The 13 µg/L MEC exceeds the governing WQC of 1 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *WQBELs*. The thallium WQBELs calculated according to SIP procedures are 120 µg/L as the MDEL and 61 µg/L as the AMEL.
- d) *Discharger Performance and Attainability*. Board staff statistically analyzed the Discharger's effluent data from January 2003 through July 2004. Based on this analysis, the Board determines that it is feasible for the Discharger to comply with final WQBELs for thallium (see Fact Sheet for detailed results of statistical analysis). During the period from January 2003 through July 2004, all effluent thallium concentrations were below the 120 µg/L MDEL (range from < 0.1 µg/L to 13 µg/L, 16 samples).
- e) *Antibacksliding/Antidegradation*. Antibacksliding and antidegradation requirements are satisfied, since the final WQBEL is more stringent than the previous permit limit

60. *Cyanide*

- a) *Cyanide WQC*. Cyanide WQC were promulgated in the NTR for specific waters, which include Suisun Bay. The NTR established a Criterion Chronic Concentration (CCC) and a Criterion Maximum Concentration (CMC) for the protection of aquatic life of 1 µg/L.
- b) *RPA Results*. The 14 µg/L MEC exceeds the governing WQC of 1 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c) *Concentration-based WQBELs*. The cyanide WQBELs calculated according to SIP procedures are 6.4 µg/L as the MDEL and 3.2 µg/L as the AMEL.
- d) *Immediate Compliance Infeasible*. The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through July 2004. Based on this analysis, the Board determines that the assertion of infeasibility is substantiated for cyanide (see Fact Sheet for detailed results of statistical analysis).
- e) *IPBEL*. Because it is infeasible for the Discharger to immediately comply with the cyanide WQBELs, an interim limitation is required. The Board considered self-monitoring data from January 2001 through July 2004 (cyanide concentrations ranged from < 3 µg/L to 28 µg/L) to develop an interim performance based limit. However, the data only contained 45 detected values out of 177 samples, and therefore, it was not possible to perform a meaningful statistical evaluation of current treatment performance. The previous permit included a WQBEL of 25 µg/L as a daily maximum. Therefore, the previous permit limitation of 25 µg/L is established in this Order as the interim limitation, expressed as a daily maximum limitation.
- f) *Discharger's Performance and Attainability*. During the period January 2001 through July 2004, the Discharger's effluent concentrations (except for one) were below the interim limitation of 25 µg/L (range from < 3 µg/L to 28 µg/L, 177 samples); therefore, it is expected that the Discharger can comply with the interim limitation for cyanide.

- g) *Term of IPBEL.* The cyanide interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data or site-specific objectives (SSOs).
- h) *Cyanide Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must conduct cyanide source control strategies, as required by Provision D.7 of this Order.
- i) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.

61. *Dioxin TEQ*

- a) *Dioxin TEQ WQC.* This Order established requirements for dioxin TEQ based on the rationale described in Finding No. 42.
- b) *RPA Results.* The 0.42 pg/L MEC exceeds the translated WQC of 0.014 pg/L, demonstrating Reasonable Potential as previously described in Finding 42.
- c) *Dioxin TEQ Effluent Limits.* The WQBEL for Dioxin TEQ will be the WLA in a TMDL, or no net loading if there is no TMDL. A limit based on a WLA/TMDL is appropriate because Dioxin TEQ is a regional air deposition problem as summarized in Findings 50-52, and a WLA/TMDL will be protective of the narrative objective because that is the intent of a TMDL. However, the Board recognizes that establishing TMDLs is very time consuming, and current regulations allows a short time before the Discharger must comply with objectives. Therefore, this Order provides for an alternate limit of no net loading. This no net loading limit is as (or more) protective than a calculated numeric limit using the USEPA's Technical Support Document (the SIP does not apply to Dioxin TEQ). It is as protective, or more protective, because it would result in the reduction of a dioxin TEQ source that would not otherwise be reduced, thus meeting and possibly exceeding, the same goal as reducing dioxin TEQ to some numeric level in Waste 001. This approach is consistent with CBE v. State Water Resources Control Board, et al., 109 Cal. App.4th 1089 (2003), in which the court ruled that WQBELs are not required to be numeric.
- d) *Immediate Compliance Infeasible.* To confirm that a compliance schedule pursuant to Basin Plan, Chapter 4 is warranted, Board staff statistically analyzed the Discharger's effluent data from 2000 through 2004. Based on this analysis, the Board determines that the Discharger would not be able to immediately meet a numeric WQBEL calculated pursuant to the EPA TSD (see Fact Sheet for detailed results of statistical analysis).
- e) *IPBEL.* Because it is infeasible for the Discharger to immediately comply, an interim limitation is appropriate to ensure no decline in performance. Historically, interim performance-based effluent limitations (IPBELs) have been referenced to the 99.87th percentile value of recent effluent data. Statistical analysis indicate that the 99.87th percentile from 2000 to 2004 is 0.82 pg/L (based on the five congeners regularly detected, which include: 1,2,3,4,6,7,8 HpCDD, OCDD, 1,2,3,4,6,7,8 HpCDF, 1,2,3,4,7,8,9 HpCDF, and OCDF). The previous permit included an interim limitation of 0.65 pg/L as a monthly average, which is more stringent than the 99.87th percentile of the recent effluent data. Therefore, the previous permit limitation of 0.65 pg/L is established in this Order as the interim limitation, expressed as a monthly average limitation (see also Finding 53 for further description of the basis for use of the five congeners).



- f) *Discharger's Performance and Attainability.* Self-monitoring effluent data are available from 2000 through 2004. During this time, Dioxin TEQ (based on congeners 1,2,3,4,6,7,8 HpCDD, OCDD, 1,2,3,4,6,7,8 HpCDF, 1,2,3,4,7,8,9 HpCDF, and OCDF) ranged from nondetect to 0.42 pg/L (assuming a zero value for nondetect congeners); therefore, it is expected that the Discharger can comply with interim limits provided non-detect is considered zero in TEQ calculations consistent with the SIP.
- g) *Term of IPBEL.* The Dioxin TEQ interim limitation shall remain in effect until July 1, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL. This date is 10 years from the effective date of the limit in the previous permit.
- h) *Dioxin TEQ Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must conduct dioxin TEQ source control strategies, as required by Provision D.7 of this Order.
- i) *Expected Final Dioxin TEQ Limitations.* The final Dioxin TEQ WQBELs will be consistent with the WLA in the adopted Dioxin TEQ TMDL. As discussed in Finding 61(c), in the absence of a TMDL for Dioxin TEQ at the end of the compliance schedule (July 1, 2010), the Board finds it appropriate for the Discharger to offset its current dioxins and furans discharge to the Bay, and meet a final limit of no net loading. No net loading means that the actual loading from the discharge must be offset by at least an equivalent loading of the same pollutant achieved through mass offset. For dioxins and furans, this no net loading will apply to all 17 compounds using the latest Toxicity Equivalents approach that is approved by the U.S. EPA at that time. This Order requires the Discharger to propose a mass offset program one year before termination of the compliance schedule if a TMDL has not been, or is not expected to be completed in time. In the interim (until July 1, 2010), the Discharger will support the Board's TMDL effort, and comply with the performance-based Dioxin TEQ concentration limitation to cooperate in maintaining current ambient receiving water conditions.

62. *PCBs*

- a) *PCBs WQC.* The CTR contains a numeric water quality criterion of 0.00017  $\mu\text{g/L}$  for the sum of seven individual PCB compounds for the protection of human health based on the consumption of aquatic organisms.
- b) *RPA Results.* The basis for reasonable potential for PCBs is described in Finding No. 48 (Trigger 3).
- c) *PCB Effluent Limits.* The WQBELs calculated according to SIP procedures are 0.00034  $\mu\text{g/L}$  as the MDEL and 0.00017  $\mu\text{g/L}$  as the AMEL.
- d) *Immediate Compliance Infeasible.* Compliance with the final WQBELs cannot be determined at this time as the MLs of 0.5  $\mu\text{g/L}$  (for each PCB) identified in Appendix 4 of the SIP, are higher than the final calculated WQBELs.
- e) *Interim Effluent Limitations.* Interim limitations are established at the respective MLs. The Discharger may demonstrate compliance by showing no detection of any PCBs above the SIP ML of 0.5  $\mu\text{g/L}$ . The previous Order includes interim limits for total PCB of 0.0007  $\mu\text{g/L}$  (monthly average) and 0.3  $\mu\text{g/L}$  (daily average) developed based on BPJ.



- f) *Discharger's Performance and Attainability.* Self-monitoring effluent data are available from January 2001 through July 2004. PCBs were not detected in the effluent in any of the samples using USEPA approved protocols. As mentioned in an earlier finding, the Discharger detected PCBs using sensitive analytical techniques, but at levels well below the ML. Therefore, the Discharger should be able to comply with the interim effluent limitations contained in this Order.
- g) *Term of Interim Effluent Limitations.* PCBs interim effluent limitations shall remain in effect until May 17, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

**63. Whole Effluent Acute Toxicity**

- a) *Permit Requirements.* This Order includes effluent limits for whole-effluent acute toxicity that are unchanged from the previous Order. All bioassays shall be performed according to the U.S. EPA approved method in 40 CFR 136, currently "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, 5<sup>th</sup> Edition." SWRCB staff recommended to the Boards that new or renewed permit holders be allowed a time period in which laboratories can become proficient in conducting the new tests. The Discharger is required to use the 5<sup>th</sup> Edition method for compliance determination upon the effective date of this Order. If the Discharger needs a time period for the transition from the 4<sup>th</sup> to the 5<sup>th</sup> Edition method, it should submit a written request with justifications to the Executive Officer within 30 days of the permit adoption date.
- b) *Compliance History.* During 2001-2004, the eleven sample median survival was 90-100 percent. The 90th percentile survival was 100 percent. These data comply with effluent limitations.

**Whole Effluent Chronic Toxicity**

- 64. *Program History.* The Basin Plan contains a narrative toxicity objective stating that "All waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental responses to aquatic organisms" and that "there shall be no chronic toxicity in ambient waters" (Basin Plan, page 3-4). In 1986, the Board initiated the Effluent Toxicity Characterization Program (ETCP), with the goal of developing and implementing toxicity limits for each discharger based on actual characteristics of both receiving waters and waste streams. Dischargers were required to monitor their effluent using critical life stage toxicity tests to generate information on toxicity test species sensitivity and effluent variability to allow development of appropriate chronic toxicity effluent limitations. In 1988 and 1991, selected dischargers conducted two rounds of effluent characterization. A third round was completed in 1995, and the Board is evaluating the need for an additional round. Board guidelines for conducting toxicity tests and analyzing results were published in 1988 and last updated in 1991.
- 65. Order No. 00-011 specified a numeric limit for chronic toxicity based on assessment of the information from the ETCP and to implement the Basin Plan's narrative objective for toxicity. Order No. 00-011 required the Discharger to perform toxicity testing on *Atherinops affinis* (topsmelt) for compliance determination. Additionally, Order No. 00-011 required an effluent chronic toxicity testing screening program as part of the Discharger's application for permit reissuance to identify the most sensitive species. The Discharger submitted a report, dated October 31, 2003, presenting the results of these tests. Based on the three rounds of screening, it appears that *Menidia beryllina* (inland silverside) is the most sensitive species of those tested.
- 66. In accordance with the toxicity testing requirements established in Order No. 00-011, the Discharger has conducted toxicity testing. Chronic toxicity testing data collected from 2001 to 2004 indicate a

range of 1 to 2 TU<sub>c</sub>. These results are below the permit limits of 10 (median) and 20 TU<sub>c</sub> (90<sup>th</sup> percentile), respectively.

#### **Pollutant Prevention and Pollutant Minimization**

67. The Discharger has established a Pollution Prevention Program under the requirements specified by the Board in Chapter 4 of the Basin Plan. The Board expects the Discharger to continue with its efforts outside the scope of this NPDES permit as appropriate to proactively avoid water quality impacts from its discharges. Additionally,
- a. In accordance with Section 2.4.5 of the SIP, this NPDES permit specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.
  - b. There may be some redundancy required between the Pollution Prevention Program and the Pollutant Minimization Program.
  - c. Where the two programs' requirements overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
  - d. Furthermore, for pollutants where the Discharger requested interim limits, this Order's provisions require the Discharger to conduct source control and/or pollution minimization measures described in the Discharger's infeasibility report submitted on February 11, 2005, consistent with Section 2.1 of the SIP, and Chapter 4 of the Basin Plan.
  - e. Section 13263.3(d)(1)(C) establishes a separate process outside of the NPDES permit process for preparation, review, approval, and implementation of pollution prevention measures. The measures required in this NPDES permit are not intended to fulfill the requirements of 13263.

#### **Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy**

68. *SIP- Required Dioxin study.* The SIP states that each Board shall require major and minor POTWs and industrial dischargers in its region to conduct effluent monitoring for the 2,3,7,8-TCDD congeners whether or not an effluent limit is required for 2,3,7,8-TCDD. The monitoring is intended to assess the presence and amounts of the congeners being discharged to inland surface waters, enclosed bays, and estuaries. The SWRCB will use these monitoring data to establish strategies for a future multi-media approach to control these chemicals.
69. On August 6, 2001, the Board sent a letter to all the permitted dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data, and the dioxin study. The letter (described above) is referenced throughout this Order as the "August 6, 2001 Letter".
70. Pursuant to the August 6, 2001 Letter from Board Staff, the Discharger submitted workplans and sampling results for characterizing the levels of selected constituents in the effluent and ambient receiving water.
71. *Monitoring Requirements (Self-Monitoring Program).* The SMP includes monitoring at the outfalls for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For a number of constituents that the Board has granted interim limits (e.g., selenium and cyanide), this

Order contains weekly monitoring. The exception to this requirement is dioxin, and pollutants where interim limits are an artifact of high detection limits. For dioxins, due to the considerable costs, high detection limits, and ambient nature of the source, this Order requires quarterly monitoring. Additionally, this Order requires twice yearly monitoring for PCBs to demonstrate compliance with interim effluent limitations. In lieu of near field discharge specific ambient monitoring, it is acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the August 6, 2001 letter, and the RMP.

72. *Optional Mass Offset.* This Order contains requirements to prevent further degradation of the impaired waterbody. Such requirements include the adoption of interim mass limits that are based on treatment plant performance, provisions for aggressive source control, feasibility studies for wastewater reclamation, and treatment plant optimization. After implementing these efforts, the Discharger may find that further net reductions of the total mass loadings of the 303(d)-listed pollutants to the receiving water can only be achieved through a mass offset program. This Order includes an optional provision for a mass offset program.

#### **Storm Water**

73. The Discharger is required to continue to update and maintain its storm water pollution prevention plan (SWPPP) for the entire facility.
74. This Order retains the existing Order's effluent limitations for Outfalls 003-005.

#### **Other Discharge Characteristics and Permit Conditions**

75. *NPDES Permit.* This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.
76. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharges and have been provided an opportunity to submit their written views and recommendations. Board staff prepared a Fact Sheet and Response to Comments, which are hereby incorporated by reference as part of this Order.
77. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

**IT IS HEREBY ORDERED**, pursuant to the provisions of Division 7 of the California Water Code, regulations, and plans and policies adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the Discharger shall comply with the following:

#### **A. DISCHARGE PROHIBITIONS**

1. Discharge of any wastewater at a location or in a manner different from that described in this Order is prohibited.
2. Discharge of process wastewater Waste 001 at any point where it does not receive an initial dilution of at least 10:1 is prohibited.

3. The bypass or overflow of untreated or partially treated process wastewater to waters of the State, either at the treatment plant or from the collection system is prohibited.

## B. EFFLUENT LIMITATIONS

### Production-Based Mass Emission Limits & Technology-Based Concentration Limits

1. The discharge at Outfall 001 containing constituents in excess of any of the following mass loading limits, is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD <sub>5</sub>	lb/day	2300	4100
TSS	lb/day	1800	2900
COD	lb/day	16000	31000
Oil & Grease	lb/day	670	1300
Oil & Grease	mg/L	8.0	15
Phenolic Compounds	lb/day	12	31
Ammonia as N	lb/day	1300	2800
Sulfide	lb/day	12	27
Settleable Solids	mL/L-hr	0.1	0.2
Total Chromium	lb/day	14	39
Hexavalent Chromium <sup>1</sup>	lb/day	1.1	2.5

<sup>1</sup> The Discharger may, at its option, meet this limitation by measurement of total chromium.

### Storm Water Runoff and Ballast Water Allocations

2. In addition to the monthly average and daily maximum pollutant weight allowances shown in B.1, allocations for pollutants attributable to storm water runoff and ballast water discharged as a part of Outfall 001 are permitted in accordance with the following schedules:

#### STORM WATER RUNOFF ALLOCATION

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD (5-day @ 20C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	180	360
Oil & Grease	mg/l	8	15
Phenolic Compounds	mg/l	0.17	0.35
Total Chromium	mg/l	0.21	0.60
Hexavalent Chromium	mg/l	0.028	0.062

### BALLAST WATER ALLOCATION

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD (5-day @ 20C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	240	470
Oil & Grease	mg/l	8	15
pH		within the range of 6.0 to 9.0	

The total effluent limitation is the sum of the storm water runoff allocation, the ballast water allocation and the mass limits contained in B.1.

### **Toxic Pollutants**

#### 3. Whole Effluent Acute Toxicity

Representative samples of the discharge at outfall 001 shall meet the following limits for acute toxicity. Compliance with these limits shall be achieved in accordance with Provision D.8 of this Order:

- a. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
  - (1) An eleven (11)-sample median value of not less than 90 percent survival; and
  - (2) An eleven (11)-sample 90th percentile value of not less than 70 percent survival.
- b. These acute toxicity limits are further defined as follows:
  - (1) 11-sample median limit:  
Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.
  - (2) 90th percentile limit:  
Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival.

#### 4. Chronic Toxicity

- (a) The survival of bioassay test organisms in the discharge at outfall 001 shall be:
  - (1) An eleven sample median value of less than or equal to 10 TUC,
  - (2) An eleven sample 90-percentile value of less than or equal to 20 TUC.

- (b) These chronic toxicity limits are defined as follows:



(1) A test sample showing chronic toxicity greater than 10 TUC represents consistent toxicity and a violation of this limitation, if five or more of the past ten or less tests show toxicity greater than 10 TUC.

(2) A TUC equals 100/NOEL. The NOEL is the no observable effect level, determined from IC, EC, or NOEC values. These terms and their usage in determining compliance with the limitations are defined in the Attachment A of the SMP. The NOEL shall be based on a critical life stage test using the most sensitive test species as specified by the Executive Officer. The Executive Officer may specify two compliance species if test data indicate that there is alternating sensitivity between the two species. If two compliance test species are specified; compliance shall be based on the maximum TUC value for the discharge sample based on a comparison of TUC values obtained through concurrent testing of the two species.

(3) A test sample showing chronic toxicity greater than 20 TUC represents a violation of this limitation if one or more of the past ten or less samples shows toxicity greater than 20 TUC.

5. **Toxic Substances:** The discharge at outfall 001 shall not exceed the following limits:

<u>Constituent</u>	<b>WQBEL</b>		<b>Interim Limits</b>		<u>Units</u>	<u>Notes</u>
	<u>Daily Max</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>		
Copper	24	13			µg/L	(1)(4)
Mercury	0.044	0.019			µg/L	(1)(3)(4)
Lead	7.8	3.7			µg/L	(1)(4)
Nickel	77	42			µg/L	(1)(4)
Selenium	7.8	4.2	50		µg/L	(1)(2)(4)
Thallium	120	61				(1)
Cyanide	6.4	3.2	25		µg/L	(1)(2)(4)
Total PCBs (Sum)	0.00034	0.00017	0.5		µg/L	(1)(2)(4)(5)
Dioxin TEQ	see note 7	see note 7		0.65	pg/L	(1)(6)

Footnotes:

(1) (a) All analyses shall be performed using current USEPA methods, or equivalent methods approved in writing by the Executive Officer.

(b) Limits apply to the average concentration of all samples collected during the averaging period (Daily = 24-hour period; Monthly = calendar month).

(2) The interim limit for PCBs shall remain in effect until May 17, 2010, or until the Board amends the limits based on site-specific objectives or the Waste Load Allocations in the TMDLs. The interim limits for cyanide and selenium shall remain in effect until April 27, 2010, or until the Board amends the limits based on site-specific objectives or the Waste Load Allocations in the TMDLs.

(3) Mercury: Effluent mercury monitoring shall be performed by using ultraclean sampling and analysis techniques to the maximum extent practicable, with a minimum level of 0.002 µg/l, or lower. The final limit for mercury shall remain in effect until the Board amends the limit based on the Waste Load Allocation in the TMDL for mercury.

- (4) As outlined in Section 2.4.5 of the SIP, the following are Minimum Levels that the Discharger shall achieve for pollutants with effluent limits. The table below indicates the highest minimum level that the Discharger's laboratory must achieve for calibration purposes.

Constituent	Minimum Level	Units
Copper	2	µg/L
Lead	0.5	µg/L
Mercury	0.002	µg/L
Nickel	5	µg/L
Selenium	2	µg/L
Cyanide	5	µg/L
Thallium	2	µg/L
Individual PCBs	0.5	µg/L

- (5) The PCB limit applies to the sum of the following individual PCB compounds: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, and PCB-1260.
- (6) Dioxin TEQ: The SIP does not contain an ML for this constituent, however, the Board requires use of one-half of those published in USEPA Method 1613. Compliance shall be determined as the sum of the concentrations of 1,2,3,4,6,7,8-hepta CDD, octa-CDD, 1,2,3,4,6,7,8-hepta CDF, 1,2,3,4,7,8,9-hepta CDF, and octa-CDF, and their respective TEFs. For the calculation, the Discharger shall use (a) the laboratory reported concentrations (that are determined by the procedure found in 40 CFR 136), and (b) zero for congeners that are reported as nondetect. This interim limit shall remain effective until July 1, 2010.
- (7) Starting July 2, 2010, the Discharger shall comply with the WLA in the TMDL for dioxins and furans compounds, or no net loading. No net loading means that the actual loading from the discharge must be offset by at least equivalent loading of the same pollutant achieved through mass offset, as described in Provision D.13.
- 6. Interim Mass Emission Limits – Selenium**
- Until TMDL and WLA efforts for selenium provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total selenium mass loading from the discharge at outfall 001 to Suisun Bay has not increased by complying with the following:
- Interim mass emission limit: The mass emission limit for selenium is 1.0 lb/day (running annual average). Running annual averages shall be calculated by taking the arithmetic average of the current daily mass loading value, and all of the previous year's values. The total selenium mass load shall not exceed this limit.
- The median of five consecutive samples collected from Waste 001 at locations E-001-D1 and E-001-D2 shall not have total coliform organisms exceeding 240 MPN/100 mL. Any single sample shall not exceed 10,000 MPN/100 mL.
  - The discharge from Outfall 001 shall not have residual chlorine greater than 0.0 mg/L.
  - The discharge from Outfall 001 shall not have a pH outside the range of 6.0 to 9.0.

10. The discharge from Outfalls 003, 004, and 005 containing constituents in excess or outside of the following limits is prohibited:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
pH	standard units	within 6.5 to 8.5
Oil & Grease	mg/l	daily maximum of 15
TOC	mg/l	daily maximum of 110
Visible oil	-	none observed
Visible color	-	none observed

11. **Effluent Limit Credit for Reclaimed Water Use:** If the Discharger begins to use reclaimed water, credit for influent concentrations of the constituents listed above, shall be granted in the discharge according to the following procedure provided the Discharger satisfies Provision D.3:

- a. The Discharger shall sample and analyze for constituents for which effluent limit credit is sought at least as frequently as is required in the attached Self-Monitoring Program for that constituent. Influent sampling shall occur at influent sampling station I-002 defined in the Self-Monitoring Program.
- b. The Discharger shall determine the time interval between introduction of a given constituent of concern in the influent reclaimed water and the first appearance of the constituent in the final effluent. This determination is subject to approval by the Executive Officer, and must precede any calculation of effluent limit credit for the constituent.
- c. Credit for constituents listed will be given on a mass and concentration basis.

Concentration Credit

Influent concentration multiplied by total influent reclaimed water flow volume for that monitoring interval will yield an influent mass for each constituent, which is valid for that monitoring interval. After the appropriate time lag interval described in b. above, this influent mass of the constituent is divided by the total effluent flow volume for that monitoring period to give a concentration credit for the effluent that will apply for the monitoring interval. This concentration credit is added to the existing concentration limit. The monitoring interval is the time between sampling days. For example, weekly sampling yields a one week monitoring interval. A schematic example follows:

ex. Constituent B is monitored weekly. The lag time is Y days.

Step 1: (Influent conc. of B in reclaimed water) x (Total Influent Volume of Reclaimed Water for one week) = (Influent mass of B)

Step 2: (Influent mass of B) / (Total E-001 discharge volume for one week, Y days after influent week) = (Concentration credit for constituent B, valid for that one week period)

Step 3: (Concentration credit for constituent B) + (Effluent Limitation B.5 for constituent B) = Adjusted Effluent Limit for compliance determination, valid for that week.

### Mass Credit

Influent concentration multiplied by total influent reclaimed water flow volume for that monitoring interval will yield an influent mass for each constituent, which is valid for that monitoring interval. After the appropriate time lag interval described in b. above, this influent mass of the constituent is then divided by the number of days in that monitoring period to give a mass credit for the effluent that will apply for the monitoring interval. This mass credit is added to the existing mass limit. The monitoring interval is the time between sampling days. For example, weekly sampling yields a one week monitoring interval. A schematic example follows:

ex. Constituent B is monitored weekly. The lag time is Y days.

Step 1: (Influent conc. of reclaimed water B) x (Total Influent Volume of Reclaimed Water for one week) = (Influent mass of B)

Step 2: (Influent mass of B) / (The Number of Days in that monitoring interval) = (Mass credit for constituent B, valid for that one week period)

Step 3: (Mass Credit for constituent B) + (Effluent Limitation B.6 or B.7 Mass Limit) = Adjusted Effluent Limit for compliance determination, valid for that week.

### **C. RECEIVING WATER LIMITATIONS**

1. The discharges shall not cause the following conditions to exist in waters of the State at any place:
  - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
  - b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
  - c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
  - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and
  - e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.
2. The discharges shall not cause nuisance, or adversely affect the beneficial uses of the receiving water.
3. The discharges shall not cause the following limits to be exceeded in waters of the State at any one place within one foot of the water surface:
  - a. Dissolved Oxygen: 7.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharges shall not cause further reduction in ambient dissolved oxygen concentrations.

- b. Dissolved Sulfide: 0.1 mg/L, maximum
  - c. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH by more than 0.5 pH units.
  - d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and 0.16 mg/L as N, maximum.
  - e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
4. The discharges shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the SWRCB as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

#### **D. PROVISIONS**

##### **1. Permit Compliance and Rescission of Previous Waste Discharge Requirements**

Requirements prescribed by this Order supersede the requirements prescribed by Order Nos. 00-011, 00-056, and 01-138. Order Nos. 00-011, 00-056, and 01-138 are hereby rescinded upon the effective date of this permit. This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective on December 1, 2005, provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

##### **2. Dioxins and Furans Accelerated Monitoring**

The Discharger shall determine compliance with the interim limitation of 0.65 pg/l TEQ specified in Effluent Limitations B.5 for the five congeners using the laboratory reported concentration and method detection limits (as determined by the procedure found in 40 CFR 136). The reported concentration may be based on analytical data below the lowest calibration standard. With each sampling event, the Discharger shall also determine and report the results of the other congeners of 2,3,7,8-TCDD, or the method detection limits as determined by the procedure found in 40 CFR 136. If any of these other congeners are positively detected, the Discharger shall note this in the transmittal letter in the monitoring report and immediately accelerate monitoring to twice each month until either (a) at least 3 consecutive samples show levels below detection, or (b) the Executive Officer modifies the frequency.

Additionally, 45 days after the third accelerated sampling event, Discharger shall provide a special report that addresses whether the positive detection(s) may indicate a decline in the quality of the effluent, and describes measures to investigate the cause if that is the case. The determination of



decline in performance shall consider the concentration(s) or the other congener(s) detected relative to the concentrations of the 5 limited congeners, and compare these proportions to past data using detection levels for non-detects. If the analysis suggests that proportions have significantly changed, this means that the congener profile of the discharge has changed and that there may have been a decline in performance. The Discharger shall investigate if this profile change is caused by factors and sources within the Discharger's control. If the proportions have not changed, and the Discharger is within the interim limit for the 5 congeners, the positive detection(s) may be due to normal sample variability and may be viewed as not representing a decline in performance.

### 3. Mass and Concentration Credits for Recycled Water

Prior to obtaining mass or concentration credits for using reclaimed water, the Discharger shall submit a technical report that demonstrates such credits will not cause acute toxicity in the vicinity of its discharge. The demonstration shall include, but not be limited to an assessment of the results of whole effluent toxicity and the resultant concentrations of acutely toxic compounds relative to acute criteria. Following written approval of the technical report from the Executive Officer, this provision shall be considered satisfied.

### 4. Storm Water Pollution Prevention Plan and Annual Report

The Discharger shall update and submit an updated Storm Water Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer by September 1<sup>st</sup> of each year. If the Discharger determines that it does not need to update its SWPPP, it shall submit a letter to the Executive Officer that indicates no revisions are necessary and the last year it updated its SWPPP. The Discharger shall implement the SWPPP and the SWPPP shall comply with the requirements contained in the attached Standard provisions.

The Discharger shall also submit an annual storm water report by July 1 of each year covering data for the previous wet weather season for the identified storm water discharge points. The annual storm water report shall, at a minimum, include: (a) a tabulated summary of all sampling results and a summary of visual observations taken during the inspections; (b) a comprehensive discussion of the compliance record and any corrective actions taken or planned to ensure compliance with waste discharge requirements; and (c) a comprehensive discussion of source identification and control programs for constituents that do not have effluent limitations (e.g., total suspended solids).

### 5. Effluent Characterization for Selected Constituents

The Discharger shall monitor and evaluate the discharge from Outfall E-001 for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter. The Discharger shall conduct monitoring as specified in the table below effective January 1, 2006.

Constituent type	Sampling Frequency	EPA/SM Method Number
Metals	As specified in SMP (for those not specified in SMP, Semiannual)	As specified in August 6, 2001, letter or SMP
Volatiles	Semiannual	EPA 601 or 624
Semi-volatiles	Semiannual	EPA 604 or 625
Pesticides	Semiannual	EPA 608
PAHs	As specified in SMP	EPA 610
Dioxin and Furans	As specified in SMP	EPA 1613
Total Solids	Semiannual concurrent with dioxin and furans monitoring	SM 2540B
Tributyltin	Semiannual	Batelle N-0959-2606

This information shall be included with the annual report required by Part A of the Self-Monitoring Program. The report shall summarize the data collected to date and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board no later than 180 days prior to the permit expiration date. Reporting requirements under this section may be satisfied by: (a) monthly reporting using the electronic reporting system (ERS), and (b) submittal of a complete application for permit reissuance no later than 180 days prior to the permit expiration date.

**6. Receiving Water Monitoring**

The Discharger shall continue to collect or participate in collecting background ambient receiving water data with other Dischargers and/or through the RMP. This information is required to perform RPAs and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit (or cause to have submitted on its behalf) data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

The sampling frequency and sampling station locations shall be specified in the sampling plan. The frequency of the monitoring shall consider the seasonal variability of the receiving water. It would be acceptable to select stations representative of incoming ocean waters because the combined effluent discharges to the Bay through deepwater diffusers.

**7. Pollution Prevention and Minimization Program (PMP)**

- a. The Discharger shall conduct, in a manner acceptable to the Executive Officer, a Pollution Minimization Program to reduce pollutant loadings of selenium, cyanide, PCBs, and dioxin-TEQ to the treatment plant and therefore to the receiving waters.
- b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than March 1 of each year. Annual reports shall cover January through December of the preceding year. Annual reports shall include at least the following information:
  - i. *A brief description of its treatment facilities and treatment processes.*
  - ii. *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and/or which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.
  - iii. *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants. The Discharger shall also identify sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.
  - iv. *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement tasks itself or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time-line shall be included for the implementation of each task.
  - v. *Outreach to employees.* The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these

- pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input to the Program.
- vi. *Discussion of criteria used to measure the program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Minimization Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iii), b. (iv), and b. (v).
  - vii. *Documentation of efforts and progress.* This discussion shall detail all the Discharger's activities in the Pollution Minimization Program during the reporting year.
  - viii. *Evaluation of program's and tasks' effectiveness.* The Discharger shall use the criteria established in b. (vi) to evaluate the Program's and tasks' effectiveness.
  - ix. *Identification of Specific Tasks and Time Schedules for Future Efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks to more effectively reduce the amount of pollutants to the treatment facilities, and subsequently in its effluent.
- c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
- i. A sample result is reported as detected, but not quantified (less than the ML) and the effluent limitation is less than the reported ML; or
  - ii. A sample result is reported as not detected (less than the MDL) and the effluent limitation is less than the MDL; or
- The Discharger shall expand its existing Pollution Minimization Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant (1) when there is evidence that it is present in the effluent above an effluent limitation and either (c)(i), or c(ii) is triggered, or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported ML.
- d. If triggered by the reasons in c. above and notified by the Executive Officer, the Discharger's Pollution Minimization Program shall, within 6 months, also include the following:
- i. An annual review and semiannual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data.
  - ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data.
  - iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation.
  - iv. Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy.
  - v. An annual status report that shall be sent to the Board including the following:
    - (1) All Pollution Minimization Program monitoring results for the previous year
    - (2) A list of potential sources of the reportable priority pollutant(s)

- (3) A summary of all actions undertaken pursuant to the control strategy
  - (4) A description of actions to be taken in the following year.
- e. To the extent that the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue, modify, or expand its Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
  - f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in the Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

### **Toxicity Requirements**

#### **8. Whole Effluent Acute Toxicity**

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

- a. From permit adoption date:
  - (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour flow through bioassays.
  - (2) Test organism shall be rainbow trout unless specified otherwise in writing by the Executive Officer.
  - (3) All bioassays shall be performed according to 40 CFR 136, currently the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 5<sup>th</sup> Edition. Exceptions may be granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

#### **9. Chronic Toxicity**

Consistent with the Basin Plan's specified approach for dischargers monitoring chronic toxicity on a semiannual basis, the Discharger shall comply with the following tiered approach with trigger values to ensure that potential chronic toxicity is addressed in a timely fashion:

- a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.
- b. If data from routine monitoring exceeds the evaluation parameters below, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall consist of monthly monitoring.
- c. Chronic toxicity evaluation parameter is as follows:
  - i. A single sample maximum value of 10 TU<sub>c</sub>.
  - ii. This parameter is defined as follows:
    - (1) TU<sub>c</sub> (chronic toxicity unit): A TU<sub>c</sub> equals 100/NOEL (e.g., if NOEL = 100, then toxicity = 1 TU<sub>c</sub>). NOEL is the no-observed effect level determined from IC, EC, or NOEC values.
    - (2) The terms IC, EC, NOEL and NOEC and their use are defined in Attachment A of the SMP.
- d. If data from accelerated monitoring tests are found to be in compliance with the evaluation parameters, then routine monitoring shall be resumed.
- e. If accelerated monitoring tests continue to exceed the evaluation parameter (i.e., any two consecutive tests > 10 TU<sub>c</sub>), then the Discharger shall initiate a chronic TRE.

- f. The TRE shall be conducted in accordance with the following:
- i. The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE workplan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.
  - ii. The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.
  - iii. The TRE shall be conducted in accordance with an approved workplan.
  - iv. The TRE needs to be specific to the discharge and Discharger facility, and may be in accordance with current technical guidance and reference materials including USEPA guidance materials. The TRE should be conducted as a tiered evaluation process, such as summarized below:
    - (1) Tier 1 consists of basic data collection (routine and accelerated monitoring).
    - (2) Tier 2 consists of evaluation of optimization of the treatment process including operation practices, and in-plant process chemicals.
    - (3) Tier 3 consists of a toxicity identification evaluation (TIE).
    - (4) Tier 4 consists of an evaluation of options for additional effluent treatment processes.
    - (5) Tier 5 consists of an evaluation of options for modifications of in-plant treatment processes.
    - (6) Tier 6 consists of implementation of selected toxicity control measures, as well as follow-up monitoring and confirmation of implementation success.
  - v. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity.
  - vi. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies should be employed.
  - vii. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.
  - viii. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of compliance with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.
  - ix. The Board recognizes that chronic toxicity may be episodic and identification of the causes and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.
- g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests, and definitions of terms used in the chronic toxicity monitoring are identified in Attachment A of the SMP. The Discharger shall comply with these requirements as applicable to the discharge.

#### 10. Contingency Plan Update

- a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (attached), and as prudent in accordance with current industrial facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop



and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

- b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.
- c. The Discharger shall provide the Executive Officer, upon his or her request, a report describing the current status of its Contingency Plan review and update. The Discharger shall also include, in each Annual Self-Monitoring Report, a description or summary of review and evaluation procedures, and applicable changes to its Contingency Plan.

**11. Dilution Study**

To confirm that the deepwater diffuser achieves a minimum dilution of least 10:1, within 30 days of the effective date of this Order, the Discharger shall either (a) provide a copy of its previous study, or (b) propose a new dilution study along with an implementation schedule. The new dilution study and implementation schedule are subject to the written approval of the Executive Officer.

**12. Collection System Maintenance**

Within 60 days of the effective date of this Order, the Discharger shall document (a) current preventative maintenance activities to prevent spills and leaks (e.g., percentage of collection system that it cleans and inspects on an annual basis, how cleaning and inspections occur, and how it determines which portions of the collection system need cleaning, sealing, or replacing), (b) past spills and corrective measures taken to avoid future spills (i.e., document that collection system maintenance is more proactive rather than reactive), and (c) any proposed upgrades to the collection system that will occur within the next five years.

**13. Actions for Compliance Schedule Pollutants**

This Order grants compliance schedules for selenium, cyanide, PCBs, and dioxin-TEQ. Pursuant to Section 2.1 of the SIP and Chapter 4 of the Basin Plan, the Discharger shall (a) conduct pollution minimization in accordance with Provision D.7, (b) participate in and support the development of a TMDL or an SSO for selenium, cyanide, PCBs, and dioxin-TEQ, and (c) submit an update to the Board in the annual self-monitoring report to document its efforts toward development of TMDL(s) or SSO(s). Board staff shall review the status of TMDL development. In the event TMDL(s) or SSO(s) are not developed for selenium, cyanide, or PCBs by July 1, 2009, the Discharger shall submit by July 1, 2009, a schedule that documents how it will further reduce pollutant concentrations to ensure compliance with the final limits specified in Effluent Limitations B.5. In the absence of a TMDL for dioxin-TEQ, the Discharger shall propose a mass offset program, by no later than July 1, 2009, to achieve no net loading by July 1, 2010.

**14. Self-Monitoring Program**

The Discharger shall comply with the Self-Monitoring Program (SMP) for this Order as adopted by the Board. The SMP may be amended by the Executive Officer pursuant to USEPA regulations 40 CFR 122.62, 122.63, and 124.5.

**15. Standard Provisions and Reporting Requirements**

The Discharger shall comply with all applicable items of the Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993 (attached), or any

amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

**16. Change in Control or Ownership**

- a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.
- b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see Standard Provisions & Reporting Requirements, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

**17. Permit Reopener**

The Board may modify or reopen this Order and Permit prior to its expiration date in any of the following circumstances:

- (1) If present or future investigations demonstrate that the discharge(s) governed by this Order and Permit will or have a reasonable potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters;
- (2) New or revised WQOs come into effect for the San Francisco Bay estuary and contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this permit will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order and Permit is not intended to restrict in any way future modifications based on legally adopted WQOs or as otherwise permitted under Federal regulations governing NPDES permit modifications;
- (3) If translator or other water quality studies provide a basis for determining that a permit condition(s) should be modified. The Discharger may request permit modification on this basis. The Discharger shall include in any such request an antidegradation and antibacksliding analysis.
- (4) To implement an effective TMDL,
- (5) To allow for a mass offset program.

**18. Order Expiration and Reapplication**

- a. This Order expires on November 30, 2010.
- b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements. The application shall be accompanied by a summary of all available water quality data, including conventional pollutant data from no less than the most recent three years, and of toxic pollutant data from no less than from the most recent five years, in the discharge and receiving water. Additionally, the Discharger must include with the application the final results of any studies that may have bearing on the limits and requirements of the next permit. Such studies include dilution studies, translator studies, and alternate bacteria indicator studies.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 21, 2005.

  
\_\_\_\_\_  
BRUCE H. WOLFE  
Executive Officer

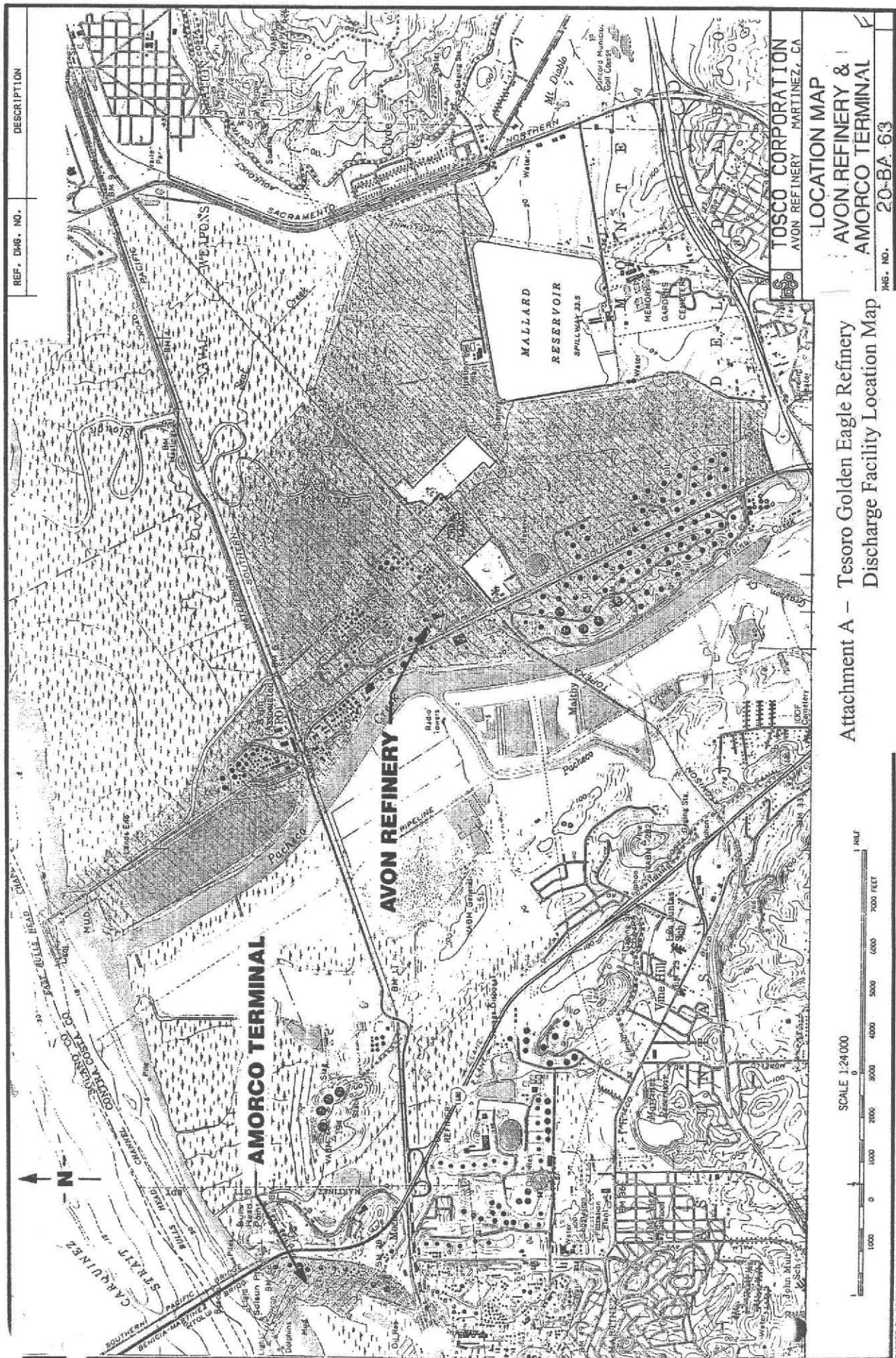
**Attachments:**

- A. Discharge Facility Location Map
- B. Discharge Facility Treatment Process Diagram
- C. Self-Monitoring Program, Part B
- D. Fact Sheet
- E. The following documents are part of this Order, but are not physically attached due to volume. They are available on the Internet at: <http://www.waterboards.ca.gov/sanfranciscobay/Download.htm>
  - Self-Monitoring Program, Part A
  - Standard Provisions and Reporting Requirements, August 1993
  - Board Resolution No. 74-10

**ATTACHMENT A**







REF. Dwg. NO. \_\_\_\_\_

DESCRIPTION

SCALE 1:24000  
 0 1000 2000 3000 4000 5000 6000 7000 FEET  
 1 HALF

Attachment A - Tesoro Golden Eagle Refinery  
 Discharge Facility Location Map

FIG. NO. 20-BA-63

DIETRICH POST REORDER NO. 110841

TO CONTR.

TOSCO CORPORATION  
 AVON REFINERY MARTINEZ, CA

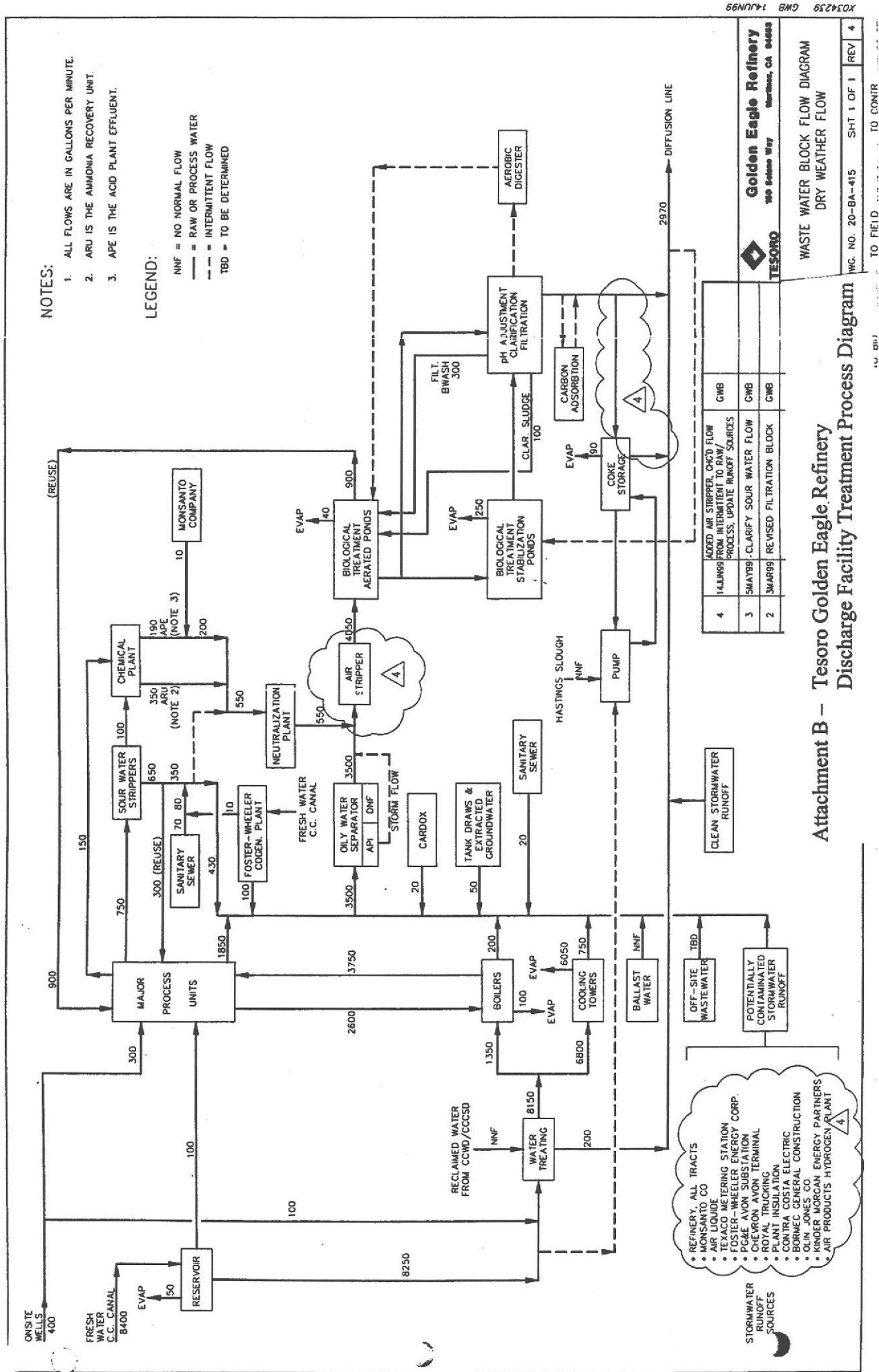
LOCATION MAP

AVON REFINERY &  
 AMORCO TERMINAL



## **ATTACHMENT B**





REV	DATE	DESCRIPTION
4	14JUN99	ADDED AIR STRIPPER, CHIC FLOW FROM INTERMITTENT TO RAW/PROCESS, UPDATE RUNOFF SOURCES
3	3MAY99	CLARIFY SOUR WATER FLOW
2	3MAR99	REVISED FILTRATION BLOCK

# Attachment B - Tesoro Golden Eagle Refinery Discharge Facility Treatment Process Diagram





## **ATTACHMENT C**



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**SELF-MONITORING PROGRAM**

**FOR**

**TESORO REFINING & MARKETING COMPANY  
MARTINEZ, CONTRA COSTA COUNTY**

**NPDES PERMIT NO. CA0004961**

**ORDER NO. R2-2005-0041**

**Consists of:**

**Part A (not attached)**

**Adopted August 1993**

**and**

**Part B (Attached)**

**Adopted: September 21, 2005**

**Effective: December 1, 2005**

*Note: Part A (dated August 1993) and Standard Provisions and Reporting Requirements for NPDES Surface Water Discharger Permits (dated August 1993) referenced in this Self Monitoring Program are not attached but are available for review or download on the Board's website at [www.waterboards.ca.gov/sanfranciscobay/](http://www.waterboards.ca.gov/sanfranciscobay/)*

## SELF-MONITORING PROGRAM – Part B

### I. Description of Sampling and Observation Stations

#### A. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001-D1	At any point in the Tract 1 sanitary sewer where adequate disinfection is assured.
E-001-D2	At any point in the Tract 2 sanitary sewer where adequate disinfection is assured.
E-001	At any point in the outfall leading to the deepwater diffuser, where all wastes tributary thereto are present such that the sample is representative of the treated wastewater effluent.
E-003	At any point in the outfall from the Waste 003 separating sump.
E-004	At any point in the outfall from the Waste 004 separating sump.
E-005s	At a point in each source area resulting in discharges of Waste 005, not more than 5 feet from the point(s) of discharge of Waste 005. Exact sampling point for each discharge area is identified in Table 2 (Attached).

#### B. INFLUENT

<u>Station</u>	<u>Description</u>
I-002	At any point in the pipe which delivers only reclaimed water to the facility, but upstream of any water treatment unit, blending point, or point of use.

#### C. RECEIVING WATER

<u>Station</u>	<u>Description</u>
C-R-3	At a point in Suisun Bay, located not more than 1,000 feet west of Outfall E-001, where representative ambient temperature and water quality of the receiving water can be measured.
C-001	At a point in Suisun Bay, located over the geometric center of the deepwater diffusers for Waste 001.

#### D. RAINFALL

<u>Station</u>	<u>Description</u>
R-1	The nearest official National Weather Service rainfall station or other station acceptable to the Executive Officer.



## II. SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS

The schedule of sampling, analysis and observation shall be that given in the tables below.

**TABLE 1A - SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS [1]**

<b>Sampling Station:</b>			<b>E-001</b>	
<b>Type of Sample:</b>			<b>G</b>	<b>C-24</b>
<b>Parameter</b>	<b>Units</b>	<b>Notes</b>	<b>[1]</b>	<b>[8]</b>
Flow Rate	MGD	[2]		Cont/D
pH	s.u.			Cont
Temperature	°F			Cont
Chlorine residual	mg/L		M	
Total Coliform	MPN/100mL	[16]	W	
BOD	mg/L lb/day			M
COD	mg/L lb/day			M
TSS	mg/L lb/day			M
TPH	µg/L		M	
Oil & Grease	mg/L lb/day	[3,4]	M	M
Total Phenols	mg/L lb/day		M	
Chromium (total)	µg/L lb/day	[14]		M
Chromium (VI)	µg/L lb/day			M
Settleable Matter	ml/l-hr	[4]	M	
Sulfides	mg/L lb/day	[4]	M	
Ammonia N	mg/L lb/day		M	
Acute Toxicity	% Survival	[5]		W
Chronic Toxicity		[6]		2/Y
Copper	µg/L			M
Lead	µg/L			M
Mercury	µg/L	[7]	M	M
Nickel	µg/L			M
Selenium	µg/L	[9]		W
Thallium				M
Cyanide	µg/L	[10]	W	
Benzo(a)Anthracene	µg/L	[11]	2/Y	
Benzo(a)Pyrene	µg/L	[11]	2/Y	
Benzo(b)Fluoranthene	µg/L	[11]	2/Y	
Benzo(k)Fluoranthene	µg/L	[11]	2/Y	
Chrysene	µg/L	[11]	2/Y	
Dibenzo(a,h)Anthracene	µg/L	[11]	2/Y	

Sampling Station:			E-001	
Type of Sample:			G	C-24
Parameter	Units	Notes	[1]	[8]
Indeno(1,2,3-cd)Pyrene	µg/L	[11]	2/Y	
PCBs	µg/L	[4,12]	2/Y	
2,3,7,8-TCDD and congeners	pg/l	[13]	Q	
Aluminum	µg/L	[15]		M
Standard Observations	Daily			D

**Table 1-B Stormwater**

Sampling Station		E-003, E-004, and E-005s [A]
Type of Sample		G
Parameter	Units	
Oil & Grease	mg/l	On each occurrence
TOC	mg/l	On each occurrence
TPH	mg/L	On each occurrence
TSS	mg/l	On each occurrence
Specific Conductance	µmhos/cm	On each occurrence
pH	s.u	On each occurrence

[A] For E-005s discharges, samples for chemical analysis shall be collected at least twice during the wet season.

**Table 1-C Receiving Water**

Sampling Station			CR-3	C-001
Type of Sample			G	G
Parameter	Units	Notes		
Temperature	°F		Q	Q
pH	s.u.		Q	Q
Dissolved Oxygen	Mg/l		Q	Q
Sulfides	Mg/l	[17]	Q	Q
Unionized Ammonia	Mg/l		Q	Q
Salinity	ppt		Q	Q
Hardness	mg/L		Q	Q
Standard Observations			Q	Q

### **LEGEND FOR TABLE 1**

#### **Types of Samples:**

C-24= composite sample, 24 hours (includes continuous sampling, such as for flows)

G= grab sample

O= observation

#### **Frequency of Sampling:**

Cont. = continuous  
Cont/D = continuous monitoring & daily reporting  
M = once each month  
W = once each week  
Y = once each calendar year  
2/Y = Two times a year, one in wet season, one in dry season.  
Q = once each calendar quarter  
(with at least two-month intervals)

Parameter and Unit Abbreviations:  
BOD<sub>5</sub> 20°C = Biochemical Oxygen Demand, 5-day, at 20°C  
COD = Chemical Oxygen Demand  
TSS = Total Suspended Solids  
MGD = million gallons per day  
mg/L = milligrams per liter  
ml/L-hr = milliliters per liter, per hour  
µg/L = micrograms per liter  
pg/L = picograms per liter  
kg/day = kilograms per day  
kg/mo = kilograms per month  
TOC = Total Organic Carbon

### **FOOTNOTES FOR TABLE 1**

- [1] Indicates sampling is required during the entire year. The Discharger shall use approved USEPA Methods with the lowest Minimum Levels specified in the SIP and described in footnote 4 of Effluent Limitations B.5, and in the August 6, 2001, letter.
- [2] Flow Monitoring: Effluent flow shall be measured continuously at Outfall 001, and reported using the values calculated by the electronic reporting system (ERS). For effluent flows, the following information shall also be reported, monthly:
- Daily Flow (MG)  
Average Daily Flow (MGD)  
Maximum Daily Flow (MGD)  
Minimum Daily Flow (MGD)  
Total Flow Volume (MG)
- [3] Oil & Grease Monitoring.  
Each Oil & Grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsing as soon as possible after use, and the solvent rinsing shall be added to the composite sample for extraction and analysis.
- [4] Grab Samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.
- [5] Bioassays: Monitoring of the bioassay water shall include, on a daily basis, the parameters specified in the USEPA-approved method, such as pH, dissolved oxygen, ammonia nitrogen, and temperature. These results shall be kept onsite, and made available upon request. If the fish survival rate in the effluent is less than 70 percent or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted as soon as practicable with new fish and shall continue back to back until compliance is demonstrated. Test species shall be rainbow trout.

- [6] A Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Sections V and VI of the SMP contained in this Order.
- [7] The Discharger may, at its option, sample effluent mercury either as grab or as 24-hour composite samples. Use ultra-clean sampling (USEPA 1669) to the maximum extent practicable and ultra-clean analytical methods (USEPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as USEPA 245), if that alternative method has an ML of 2 ng/L or less.
- [8] Composite sampling: 24-hour composites may be made up of discrete grabs collected over the course of a day and volumetrically or mathematically flow-weighted. Samples for inorganic pollutants maybe combined prior to analysis. Samples for organic pollutants should be analyzed separately. Samples shall be taken on random days.
- [9] Selenium must be analyzed for by ICP/MS, or the atomic absorption gaseous hydride procedure (USEPA Method No. 200.8, or Standard Method No. 3114B or 3114C).
- [10] The Discharger may, at their option, analyze for cyanide as Weak Acid Dissociable Cyanide using protocols specified in Standard Method Part 4500-CN-I, USEPA Method OI 1677, or equivalent alternatives in latest edition. Alternative methods of analysis must be approved by the Executive Officer.
- [11] The latest versions of USEPA Methods 624 (or 8240), and 625 (or 8270) shall be used.
- [12] The latest versions of USEPA Methods 608 (or 8080) shall be used to determine compliance with the limits for Total PCBs. The Discharger shall attempt to achieve the lowest detection limits commercially available using this method and shall instruct its lab to calibrate to the minimum level indicated in footnote 4 of Effluent Limitation B.5:
- [13] Chlorinated dibenzodioxins and chlorinated dibenzofurans shall be analyzed using the latest version of USEPA Method 1613; the analysis shall be capable of achieving one-half of the USEPA MLs and the Discharger shall collect 4-liter samples to lower the detection limits to the greatest extent practicable. Alternative methods of analysis must be approved by the Executive Officer.
- [14] The Discharger may, at its option, comply with the limits for hexavalent chromium by using total chromium results. In this case, analysis for hexavalent chromium is waived.
- [15] The Discharger shall monitor for both total and acid soluble aluminum.
- [16] The Discharger shall monitor at sampling stations E-001-D1 and E-001-D2.
- [17] The Discharger is required to conduct receiving water monitoring for sulfides only if the receiving water dissolved oxygen is below 2.0 mg/L.

**III. Modification of Self-Monitoring Program, Part A (Part A):**

- A. If any discrepancies exist between Part A and Part B of the SMP, Part B prevails.

B. Sections C.3. and C.5. are satisfied by participation in the Regional Monitoring Program.

C. Modify Section F.1, first paragraph, as follows:

**Spill Reports**

A report shall be made of any spill of oil or other hazardous material to waters of the State. The spill shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or discharger's knowledge of occurrence. Spills shall be reported by telephone as follows:

During weekdays, during office hours of 8 am to 5 pm, to the Regional Water Board:  
Current telephone number: (510) 622-2369, (510) 622-2460 (FAX).

During non-office hours, to the State Office of Emergency Services:

Current telephone number: (800) 852-7550.

A report shall be submitted to the Board within five (5) working days following telephone notification, unless directed otherwise by Board staff. A report submitted by facsimile transmission is acceptable for this reporting. The written report shall contain information relative to: ...

D. Modify Section F.2, first paragraph, as follows:

**Reports of Plant Bypass, Treatment Unit Bypass and Permit Violation**

The following requirements apply to all treatment plant bypasses and significant non-compliance occurrences, except for bypasses under the conditions contained in 40 CFR Part 122.41 (m)(4) as stated in Standard Provision A.13. In the event the Discharger violates or threatens to violate the conditions of the waste discharge requirements and prohibitions or intends to experience a plant bypass or treatment unit bypass due to: . .

E. Modify Section F.4, first paragraph, as follows:

**Self-Monitoring Reports**

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the requirements listed in Self-Monitoring Program, Part A. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices. The report shall be submitted to the Board no later than the first day of the second month after the reporting period ends. The report shall be comprised of the following:

...

And add at the end of Section F.4a the following:

If the Discharger wishes to invalidate any measurement, the letter of transmittal will include: a formal request to invalidate the measurement; the original measurement in question; the reason for invalidating the measurement; all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.); and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem. The invalidation of a measurement requires the approval of Board staff, and will be based solely on the documentation submitted at this time.



And add at the end of Section F.4 the following:

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. The Discharger is currently submitting SMRs electronically in a format approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS). The ERS format includes, but is not limited to, a transmittal letter, summary of violation details and corrective actions, and transmittal receipt. If there are any discrepancies between the ERS requirements and the "hard copy" requirements listed in the SMP, then the approved ERS requirements supercede.

F. Add at the end of Section F.5, Annual Reporting, the following:

An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Board by March 1 of the following year. This report shall include the following:

A comprehensive discussion of treatment plant performance and compliance with waste discharge requirements. This discussion should include any corrective actions taken or planned such as changes to facility equipment or operation practices which may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment or disposal practices. Additionally, the Annual Report should include a plan view drawing or map showing the Dischargers' facility, flow routing and sampling and observation station locations.

G. The following are additions to Part A of Self-Monitoring Program:

1. Reporting Data in Electronic Format:

The Discharger has the option to submit all monitoring results in electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit the SMRs electronically, the following shall apply:

- a. *Reporting Method:* The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS).
- b. *Modification of Reporting Requirements:* Reporting requirements F.4 in the attached SMP, Part A, dated August 1993, shall be modified as follows. In the future, the Board intends to modify Part A to reflect these changes.
- c. *Monthly Report Requirements:* For each calendar month, an SMR shall be submitted to the Board in accordance with the following:
  - i. The report shall be submitted to the Board no later than 30 days from the last day of the reporting month
  - ii. *Letter of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:
    - (1) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period.

- (2) Details of the violations: parameters, magnitude, test results, frequency, and dates.
  - (3) The cause of the violations.
  - (4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.
  - (5) If the Discharger wishes to invalidate any measurement, the letter of transmittal will include: a formal request to invalidate the measurement; the original measurement in question; the reason for invalidating the measurement; all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.); and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem. The invalidation of a measurement requires the approval of Regional Water Board staff, and will be based solely on the documentation submitted at this time.
  - (6) Signature: The letter of transmittal shall be signed by the Discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
- iii. *Compliance Evaluation Summary:* Each report shall include a compliance evaluation summary. This summary shall include the number of samples in violation of applicable effluent limits.
- iv. *Results of Analyses and Observations:*
- (1) Tabulations of all required analyses and observations, including parameter, sample date, sample station, and test result.
  - (2) If any parameter is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.
  - (3) Calculations for all effluent limits that require averaging of measurements shall use an arithmetic mean, unless specified otherwise in this permit or SMP.
  - (4) Data Reporting for Results Not Yet Available: The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subjected monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR after the data become available.

(5) *Report Submittal:* The Discharger shall submit SMRs to:  
Executive Officer  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612  
Attn: NPDES Division

#### **IV. RECORDING REQUIREMENTS – RECORDS TO BE MAINTAINED**

Written reports, electronic records, strip charts, equipment calibration and maintenance records, and other records pertinent to demonstrating compliance with waste discharge requirements including self-monitoring program requirements, shall be maintained by the Discharger in a manner and at a location (e.g., wastewater treatment plant or discharger offices) such that the records are accessible to Board staff. These records shall be retained by the Discharger for a minimum of three years. The minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharges, or when requested by the Regional Water Board or by the Regional Administrator of the USEPA, Region IX.

Records to be maintained shall include the following:

##### **A. Parameter Sampling and Analyses, and Observations.**

For each sample, analysis or observation conducted, records shall include the following:

1. Identity of parameter
2. Identity of sampling or observation station, consistent with the station descriptions given in this SMP.
3. Date and time of sampling or observation.
4. Method of sampling (grab, composite, other method). Date and time analysis started and completed, and name of personnel or contract laboratory performing the analysis.
5. Reference or description of procedure(s) used for sample preservation and handling, and analytical method(s) used.
6. Calculations of results.
7. Analytical method detection limits and related quantitation parameters.
8. Results of analyses or observations.

##### **B. Flow Monitoring Data.**

For all required flow monitoring, records shall include the following:

1. Total flow or volume, for each day.
2. Maximum, minimum and average daily flows for each calendar month.

##### **C. Wastewater Treatment Process Solids**

1. For each treatment unit process which involves solid removal from the wastewater stream, records shall include the following:
  - a. Total volume and/or mass quantification of solids removed from each unit (e.g., grit, skimmings, undigested sludge), for each calendar month; and
  - b. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).
2. For final dewatered sludge from the treatment plant as a whole, records shall include the following:
  - a. Total volume and/or mass quantification of dewatered sludge, for each calendar month; Solids content of the dewatered sludge; and
  - b. Final disposition of dewatered sludge (point of disposal location and disposal method).

## V. CHRONIC TOXICITY MONITORING REQUIREMENTS

- A. Sampling. The Discharger shall collect 24-hour composite samples of the treatment facilities' effluent at the compliance point specified in Table 1 of the SMP, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.
- B. Test Species. Chronic toxicity shall be monitored by using critical life stage test(s) and the most sensitive tests species identified by screening phase testing described in Attachment A of the SMP. The Discharger shall conduct routine monitoring with the species approved by the Executive Officer. The approved species at this time is inland silverside (*Menidia beryllina*).

If the Discharger uses two or more species, after at least twelve test rounds, the Discharger may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUC values specified in the effluent limitations was never observed using that test species.

- C. Conditions for Accelerated Monitoring: The Discharger shall accelerate the frequency of monitoring to monthly, or as otherwise specified by the Executive Officer, after exceeding a single sample maximum of 10 TUC.
- D. Methodology: Sample collection, handling and preservation shall be in accordance with USEPA protocols. The test methodology used shall be in accordance with the references cited in the Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.
- E. Dilution Series: The Discharger shall conduct tests at 100%, 50%, 25%, 10%, and 5%, and 2.5%. The "%" represents percent effluent as discharged.

## VI. CHRONIC TOXICITY REPORTING REQUIREMENTS

- A. Routine Reporting: Toxicity test results for the current reporting period shall include the following, at a minimum, for each test:
1. Sample date(s)

2. Test initiation date
  3. Test species
  4. End point values for each dilution (e.g., number of young, growth rate, percent survival)
  5. NOEC value(s) in percent effluent
  6. IC<sub>15</sub>, IC<sub>25</sub>, IC<sub>40</sub>, and IC<sub>50</sub> values (or EC<sub>15</sub>, EC<sub>25</sub> ... etc.) in percent effluent
  7. TUc values (100/NOEC, 100/IC<sub>25</sub>, and 100/EC<sub>25</sub>)
  8. Mean percent mortality ( $\pm$  s.d.) after 96 hours in 100% effluent
  9. NOEC and LOEC values for reference toxicant test(s)
  10. IC<sub>50</sub> or EC<sub>50</sub> value(s) for reference toxicant test(s)
  11. Available water quality measurements for each test (i.e., pH, D.O., temperature, conductivity, hardness, salinity, ammonia)
- B. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least three of the most recent samples. The information in the table shall include the items listed above under VI.A, item numbers 1, 3, 5, 6(IC<sub>25</sub> or EC<sub>25</sub>), 7, and 8.

## VII. MISCELLANEOUS REPORTING

- A. The Discharger shall retain and submit (when required by the Executive Officer) the following information concerning the monitoring program for organic and metallic pollutants.
  1. Description of sample stations, times, and procedures.
  2. Description of sample containers, storage, and holding time prior to analysis.
  3. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal surrogate standard.
- B. The Discharger shall submit in the monthly self-monitoring report the metallic and organic test results together with the detection limits (including unidentified peaks). All unidentified (non-Priority Pollutant) peaks detected in the USEPA 624, 625 test methods shall be identified and semi-quantified. Hydrocarbons detected at  $<10$   $\mu\text{g/L}$  based on the nearest internal standard may be appropriately grouped and identified together as aliphatic, aromatic and unsaturated hydrocarbons. All other hydrocarbons detected at  $> 10$   $\mu\text{g/L}$  based on the nearest internal standard shall be identified and semi-quantified.
- C. The Discharger shall submit a clear and legible sketch showing the locations of all ponds, treatment facilities, and points of waste discharge. The map shall be updated by the Discharger as changes occur.
- D. If the Discharger seeks credit for stormwater runoff/ballast water allocation (daily & monthly) for its discharge, it must use the method described in the attached Form A. To receive such credits,



Form A must be submitted with the monthly self-monitoring report and the daily maximum allocation for each day outfall 001 is monitored must be computed.

Ballast water treated and discharged as part of outfall 001 shall be metered and the volume recorded in the attached Form A for each calendar year. The 30-day average shall be the sum of the daily values in a calendar month divided by the number of days in that month. Ballast-water allocations shall be calculated by multiplying the volume of ballast water, determined above by the appropriate volume of ballast water, determined above by the appropriate concentration listed under Effluent Limitation B.X of this permit.

## VIII. SELECTED CONSTITUENTS MONITORING

- A. Effluent monitoring shall include evaluation for all constituents listed in Table 1 by sampling and analysis of final effluent.
- B. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective water quality objectives.

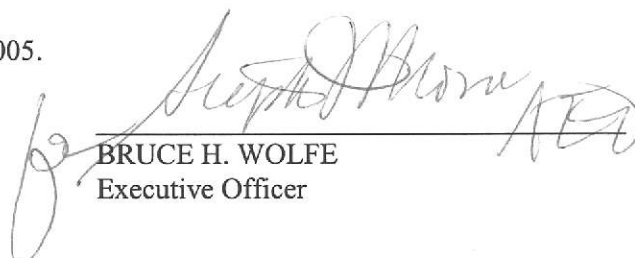
## IX. MONITORING METHODS AND MINIMUM DETECTION LEVELS

The Discharger may use the methods listed in Table 1, above, or alternate test procedures that have been approved by the USEPA Regional Administrator pursuant to 40 CFR 136.4 and 40 CFR 136.5 (revised as of May 14, 1999).

## X. Self-Monitoring Program Certification

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

- 1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. 2005-0041.
- 2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.
- 3. Is effective as of December 1, 2005.

  
BRUCE H. WOLFE  
Executive Officer

Attachment A: Chronic Toxicity – Definition of Terms and Screening Phase Requirements  
Attachment B: Form A: Stormwater/Ballast Water Allocation Procedures  
Attachment C: Table 2: E-005 Stormwater Sampling Locations

## ATTACHMENT A

### CHRONIC TOXICITY

#### DEFINITION OF TERMS & SCREENING PHASE REQUIREMENTS

##### **I. Definition of Terms**

- A. No observed effect level (NOEL) for compliance determination is equal to  $IC_{25}$  or  $EC_{25}$ . If the  $IC_{25}$  or  $EC_{25}$  cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.
- B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Kärber.  $EC_{25}$  is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.
- C. Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an  $IC_{25}$  is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.
- D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

##### **II. Chronic Toxicity Screening Phase Requirements**

- A. The Discharger shall perform screening phase monitoring:
  - 1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or
  - 2. Prior to Permit reissuance. Screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.
- B. Design of the screening phase shall, at a minimum, consist of the following elements:
  - 1. Use of test species specified in Tables 1 and 2 (attached), and use of the protocols referenced in those tables, or as approved by the Executive Officer;
  - 2. Two stages:
    - a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Table 3 (attached); and

- b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.
  3. Appropriate controls; and
  4. Concurrent reference toxicant tests.
- C. The Discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

**TABLE C 1**  
**CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS**

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFERENCE
alga	( <u>Skeletonema costatum</u> ) ( <u>Thalassiosira pseudonana</u> )	growth rate	4 days	1
red alga	( <u>Champia parvula</u> )	number of cystocarps	7-9 days	3
Giant kelp	( <u>Macrocystis pyrifera</u> )	percent germination; germ tube length	48 hours	2
abalone	( <u>Haliotis rufescens</u> )	abnormal shell development	48 hours	2
oyster mussel	( <u>Crassostrea gigas</u> ) ( <u>Mytilus edulis</u> )	{abnormal shell development; {percent survival	48 hours	2
Echinoderms (urchins - (sand dollar -	<u>Strongylocentrotus purpuratus</u> , <u>S. franciscanus</u> ); <u>Dendraster excentricus</u> )	percent fertilization	1 hour	2
shrimp	( <u>Mysidopsis bahia</u> )	percent survival; growth	7 days	3
shrimp	( <u>holmesimysis costata</u> )	percent survival; growth	7 days	2
topsmelt	( <u>Atherinops affinis</u> )	percent survival; growth	7 days	2
silversides	( <u>Menidia beryllina</u> )	larval growth rate; percent survival	7 days	3

**Toxicity Test References:**

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. USEPA/600/R-95/136. August 1995
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms as specified in 40CFR 136. Currently, this is USEPA/600/4-90/003, July 1994. Later editions may replace this version.

**TABLE C 2**  
**CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS**

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFERENCE
fathead minnow	( <u>Pimephales promelas</u> )	survival; growth rate	7 days	4
water flea	( <u>Ceriodaphnia dubia</u> )	survival; number of young	7 days	4
alga	( <u>Selenastrum capricornutum</u> )	cell division rate	4 days	4

**Toxicity Test Reference:**

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms as specified in 40CFR 136. Currently, this is the third edition, USEPA/600/4-91/002, July 1994. Later editions may replace this version.

**TABLE C 3**

**TOXICITY TEST REQUIREMENTS FOR STAGE ONE SCREENING PHASE**

REQUIREMENTS	RECEIVING WATER CHARACTERISTICS		
	Discharges to Coast	Discharges to San Francisco Bay ‡	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic Diversity:	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater (†):	0	1 or 2	3
Marine/Estuarine:	4	3 or 4	0
Total number of tests:	4	5	3

† The fresh water species may be substituted with marine species if:

- 1) The salinity of the effluent is above 1 parts per thousand (ppt) greater than 95% of the time, or
- 2) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

‡ Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95% of the time during a normal water year.

Fresh refers to receiving water with salinities less than 1 ppt at least 95% of the time during a normal water year.



Attachment B of Self-Monitoring Program: FORM A

STORMWATER / BALLAST WATER ALLOCATION PROCEDURE

This procedure uses a bankbook to inventory stormwater. Any stormwater in excess of the estimated processed stormwater is inventoried. Stormwater allocations are calculated using the actual processed stormwater developed in the attached table.

Definitions:

Dry Weather Season - The months of June to September exclusive of a one-week period following any rainstorm.

Estimated Dry Weather Process Wastewater Flow - The average effluent flowrate during the previous dry weather season.

Stormwater Runoff - The product of the inches of rainfall and the runoff factor.

Estimated Processed Stormwater - The difference between the actual effluent flow rate and the ballast water plus dry weather flow rate.

Stormwater Bankbook - Calculated inventoried stormwater.

Actual Process Stormwater - If the stormwater bankbook is not zero, the actual process stormwater equals the estimated flow. If the bankbook is zero, the actual processed stormwater is equal to the stormwater runoff for that day plus the bankbook for the previous day.

## Attachment B of Self-Monitoring Program: Form A (Cont'd)

TABLE FOR RECORDS OF RAINFALL, STORMWATER RUNOFF, AND BALLAST FLOW

Date	Rainfall (inches)	Storm Runoff Flow (rainfall x runoff factor) Gallons	Ballast Flow in Gallons
1-2			
2-3			
3-4			
4-5			
5-6			
6-7			
7-8			
8-9			
9-10			
10-11			
11-12			
12-13			
13-14			
14-15			
15-16			
16-17			
17-18			
18-19			
19-20			
20-21			
21-22			
22-23			
23-24			
24-25			
25-26			
26-27			
27-28			
28-29			
29-30			
30-31			
31-1			
Total			
Monthly Average			



Attachment B of Self-Monitoring Program: Form A (Cont'd)

CALCULATION OF STORMWATER AND BALLAST WATER ALLOCATIONS

Monthly Average Storm Runoff + Ballast Water Flow (expressed in 1000 gallons/day)										Allocation Factor (kg /1000 gallons) =		A.1 + Effluent Limits (kg /day)		Total Effluent Limit (kg /day)	
30-Day Average		BOD <sub>5</sub>	x	0.098	=	+	=								
Limitation		TSS	x	0.079	=	+	=								
(kg /day)		TOC	x	0.22	=	+	=								
		COD	x	0.68	=	+	=								
		O&G	x	0.03	=	+	=								
		Phenol	x	0.00064	=	+	=								
		Total	x	0.00079	=	+	=								
		Chrome	x	0.00079	=	+	=								
		Hex	x	0.00011	=	+	=								
		Chrome	x	0.00011	=	+	=								

**REPORT FORMAT FOR ADJUSTED EFFLUENT LIMITATIONS**

MAXIMUM DAILY LIMITS							
	BOD	TSS	COD	O&G	PHENOL	TOTAL CHROME	HEX CHROME
DATE	(kg/day)	(kg/day)	(kg/day)	(kg/day)	(kg/day)	(kg/day)	(kg/day)

Maximum Daily Limit = Effluent Limit B.5 + Stormwater Allocation  
(kg/day) (Daily Max in kg/day) (Daily Max in kg/day)

Stormwater Allocation = Effluent Limit B.6 x Daily Processed Stormwater x 3.785 liters/gal  
(kg/day) (Daily Max in mg/l) (in MGD)

## ATTACHMENT C

**TABLE 2 OF SELF-MONITORING PROGRAM, PART B**

### **E-005 SAMPLING LOCATIONS**

<b>Station Designation</b>	<b>Description</b>
E-005-T2NW	Near a stairway leading down to a non-operating saltwater pump station on the creek side of the slope.
E-005-T2S-A	Near the channel drain along the north side of a fence at a used equipment reclamation area before Gate 15 south of the Foster Wheeler area.
E-005-T2S-B	At the fence line immediately north of the railroad tracks. This area is at the extreme south end of Tract 2.
E-005-T2S-C	Across the road west of the Foster-Wheeler yard (three tall gray tanks) where runoff from the asphalt perimeter drainage channels run under the road towards the creek.
E-005-T2SW	Near the "D" Street firehouse, against the fence. This area includes paved areas around the auto shop, and the western side of the Purchasing and Storehouse.
E-005-T4NW	At the easternmost culvert that conveys runoff from this area under the road to the west
E-005-T4SW	The outlet of the pipe that drains the impoundment. The pipe has a locked valve on it and is required to be sampled when there is a discharge from the impoundment.
E-005-AS	The culvert in the northwestern part of the area

Note: All sampling locations indicated above are approximately only. Exact locations have to be ascertained on site.



## **ATTACHMENT D**



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION  
1515 CLAY STREET, SUITE 1400  
OAKLAND, CA 94612  
(510) 622 – 2300 Fax: (510) 622 - 2460

## **FACT SHEET**

for

**NPDES PERMIT and WASTE DISCHARGE REQUIREMENTS for  
TESORO REFINING & MARKETING COMPANY  
GOLDEN EAGLE REFINERY  
MARTINEZ, CONTRA COSTA COUNTY  
NPDES Permit No. CA0004961  
ORDER NO. R2-2005-0041**

### **PUBLIC NOTICE:**

#### **Written Comments**

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments must be submitted to the Regional Board no later than 5:00 p.m. on **August 8, 2005**.
- Send comments to the Attention of Robert Schlipf.

#### **Public Hearing**

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1<sup>st</sup> floor Auditorium.
- This meeting will be held on: September 21, 2005, starting at 9:00 am.

#### **Additional Information**

- For additional information about this matter, interested persons should contact Regional Board staff member: Mr. Robert Schlipf, Phone: (510) 622-2478; email: [rschlipf@waterboards.ca.gov](mailto:rschlipf@waterboards.ca.gov)

This Fact Sheet contains information regarding an application for waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for the Tesoro Golden Eagle Refinery for industrial wastewater and storm water discharges. The Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

## **I. INTRODUCTION**

Tesoro (hereinafter called the Discharger) has applied to the Board for reissuance of waste discharge requirements and a permit to discharge industrial wastewater and storm water to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES). The application and Report of Waste Discharge is dated August 20, 2004, and was supplemented on February 11, 2005.

The Discharger owns and operates a petroleum refinery with an average crude-run throughput of approximately 157,000 barrels per day. The Golden Eagle Refinery receives crude oil and other feedstocks by tankers or pipelines. Crude oil is cracked and processed at the site to produce gasoline

and diesel fuel. According to 40 CFR Part 419.20, the U.S. Environmental Protection Agency (USEPA) has classified this facility as a cracking refinery. The USEPA and the Board have classified Tesoro as a major discharger.

The receiving water for the subject discharges is Suisun Bay and Carquinez Strait. Beneficial uses for Suisun Bay and Carquinez Strait, as identified in the Basin Plan, and based on known uses of the receiving waters in the vicinity of the discharge, are:

- a. Industrial Service Supply
- b. Navigation
- c. Water Contact Recreation
- d. Non-contact Water Recreation
- e. Commercial and Sport Fishing
- f. Wildlife Habitat
- g. Preservation of Rare and Endangered Species
- h. Fish Migration
- i. Fish Spawning
- j. Estuarine Habitat

The receiving waters for the subject discharge is Suisun Bay and Carquinez Strait, which are tidally influenced water body, with significant fresh water inflows during the wet weather season. Furthermore, based on Regional Monitoring Program data, Suisun Bay and Carquinez Strait meet the definition of estuarine under the definitions included in the Basin Plan. Therefore, the effluent limitations specified in this Order for discharges to Suisun Bay and Carquinez Strait are based on the lower of the marine and freshwater Basin Plan WQOs and CTR and NTR WQC.

## II. DESCRIPTION OF EFFLUENT

Board Order Nos. 00-011, 00-056, and 01-138 (hereinafter the Previous Order), presently regulates the discharges. The discharges are described below and are based on information contained in the Report of Waste Discharge and recent self-monitoring reports.

- a. **Waste 001** consists of an average of 5.1 million gallons per day (mgd) of treated process wastewaters, including wastewater from sour water strippers, ammonia recovery unit, acid plant effluent, sanitary wastewater, cooling tower blowdown, boiler blowdown, cooling tower and boiler blowdown from the Foster Wheeler Cogeneration Plant, neutralized demineralizer regeneration water (hereinafter the Reject Water) from the water treatment system, fire water system, groundwater from remediation activities; non-hazardous wastewater generated from offsite Discharger-owned facilities, process wastewater from the Monsanto Company Catalyst Plant, and cooling tower and boiler blowdown from Air Liquide Carbon Dioxide Plant. During wet weather, Waste 001 has an additional component consisting of stormwater runoff from various onsite developed areas of Tracts 1, 2 and 3, and offsite facilities. Waste 001 is treated at the onsite wastewater treatment plant prior to being discharged to Suisun Bay through a 27-inch diameter outfall. The outfall, referred to as E-001, terminates with a multi-port diffuser (lat. 38°02'54", long. 122°05'22") located under the Avon Wharf 45 feet below mean lower low water. Table 1 below describes the quality of treated effluent (E-001) based on self-monitoring data from 2001 through 2004.

**Table 1: Summary of Pollutants in Treated Wastewater at E-001**

Parameter	Average <sup>1</sup>	Daily Maximum
pH, standard units	6.0 (minimum)	8.9
Temperature (°F)	44 (minimum)	89
Total Coliform Organisms <sup>2</sup> (MPN/ 100 mL)	Nondetect	16,000
Total Coliform Organisms <sup>3</sup> (MPN/100 mL)	Nondetect	1,100
BOD (mg/L)	8.2	18.3
COD (mg/L)	66	240
TSS (mg/L)	12.8	84
Ammonia as N (mg/L)	7.8	29.4
Oil and Grease (mg/L)	Nondetect	9.4
Total Phenols (µg/L)	Nondetect	10
Arsenic (µg/L)	4.1	11
Cadmium (µg/L)	0.09	0.4
Chromium VI (µg/L)	Nondetect	2.0
Copper (µg/L)	4.6	20
Lead (µg/L)	0.9	3.5
Mercury (µg/L)	0.0073	0.0375
Nickel (µg/L)	15.1	87
Selenium (µg/L)	11.6	41
Silver (µg/L)	Nondetect	0.09
Zinc (µg/L)	11.1	26
Cyanide (µg/L)	Nondetect	28

<sup>1</sup> Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 1 is ND.

<sup>2</sup> Refers to E-001-D2 – a description is included in the Self-Monitoring Program

<sup>3</sup> Refers to E-001-D1 – a description is included in the Self-Monitoring Program

The wastewater treatment system begins with the Discharger routing process wastewater to a central pump station (i.e., No. 1 pump station). From this pump station, process wastewater flows to an API oil and water separator that consists of a head channel that feeds four concrete channels. The API Separator uses a chain driven surface skimmer to remove oil and solids. The Discharger pumps this material to Tanks 699 and 700 for additional oil and water separation and recovery. After the API separator, wastewater flows by gravity to four Dissolved Nitrogen Flotation (DNF) units where additional oil and solids are removed. The Discharger also pumps this material to Tanks 699 and 700.

From the DNF units, wastewater is routed through an air stripper where a blower forces air through a grid of perforated tubes. The vapors from the air stripper, DNF units, and API Separator are destroyed in a thermal oxidizer. The Discharger pumps wastewater from the Air Stripper to Surge Pond No. 1 for biotreatment. Surge Pond No. 1 is a 14-acre rectangular basin that is baffled into five sections. The first section is extensively aerated whereas subsequent sections are lightly aerated. To enhance treatment in Surge Pond No. 1, the Discharger adds phosphoric acid, and occasionally specialized bacteria. From Surge Pond No. 1, wastewater flows by gravity to Surge Pond No. 2. Surge Pond No. 2 is an 8-acre rectangular basin that contains two aerators to ensure aerobic conditions near the surface, and functions mainly as a settling basin for biosolids with some bio-treatment activity. The Discharger may pump up to

900 gallons per minute of wastewater from Surge Pond No. 2 to the refinery for reuse as industrial water. The remaining wastewater from Surge Pond No. 2 is pumped to the oxpond. The oxpond is about 108 acres with an estimated capacity of 216 million gallons, but typically operates with a volume of around 150 million gallons. The oxpond contains five aerators at the inlet section of the pond to ensure oxygen levels in wastewater are adequate. It passively treats wastewater by providing a retention time of about 30 days.

From the oxpond, the Discharger routes wastewater to two clarifiers that operate in parallel. In the clarifiers, the Discharger adds coagulants and flocculants to enhance settling of wastewater solids. Clarifiers solids are centrifuged, and disposed of offsite. The supernatant from the centrifuge is routed to Surge Pond No. 1. From the clarifiers, wastewater flows through a toothed weir to two filters (Round and Zimpro) that operate in parallel. The Round filter is multimedia (sand and antracite) and consists of six chambers, while the Zimpro filter is a six-celled trickling sand filter. Both of these filters contain automatic backwash functions that allow them to maintain continuous operation. Backwash water from the filters is routed to Surge Pond No. 1 for treatment, and treated wastewater is routed to 12 Granular Activated Carbon (GAC) columns that operate in pairs (i.e., lead and lag). The Discharger uses GAC columns, as needed, to ensure treated wastewater is not toxic to aquatic life. Backwash water from the GAC columns is also discharged to Surge Pond No. 1 for further treatment.

After the GAC columns, the Discharger routes wastewater to a 26-acre Coke Pond. The Discharger indicates that the purpose of discharging treated wastewater to the Coke Pond is to (a) provide water for reuse for coke sluicing operations, (b) provide water for reuse in the dust abatement sprinklers, (c) use as backup fire water supply, and (d) to keep water in motion in order to avoid odors from stagnation, and (e) provide additional polishing of final effluent.

From the Coke Pond, the Discharger routes treated wastewater to the Clean Canal. The Clean Canal conveys treated wastewater to a sump containing three pumps that discharge water to the Bay through a deepwater diffuser located near the Avon Wharf. The Clean Canal also receives stormwater runoff, and neutralized demineralizer reject water from the Discharger's water treatment plant.

- b. **Waste 003** consists of stormwater runoff from an area of approximately 120 acres in the central and western portions of the Tract 4 tank farm. Stormwater that falls on the west side of Tract 4 is collected within tank dikes and several retention ponds downhill of the tanks. A long retention basin further downhill serves as a backup for these ponds. If runoff is excessive, stormwater will be discharged indirectly to Pacheco Slough via L-shaped overflow pipes at two possible locations that draw water from below the surface, thereby keeping oil and other floating material in the pond for subsequent removal. Since these two locations are in proximity to each other, they are collectively designated as E-003 (lat. 38°00'44", long. 122°03'55"). The Discharger has not discharged stormwater through this outfall in the past five years.
- c. **Waste 004** consists of stormwater runoff from an area of 140 to 150 acres including the southeast portion of the Tract 4 tank farm and all of the Tract 6 tank farm, and offsite facilities including the Monsanto Company Catalyst Plant, Air Liquide, Chevron Bulk Terminal Station, Kinder Morgan Energy Partners, Texaco Pump Station, and PG&E Substation. Stormwater is collected, conveyed through ditches, and discharged to the Cardox Pond, from which stormwater is pumped to E-001 or discharged indirectly via L-shaped overflow pipes at six possible locations to Hastings Slough. These six discharge locations are approximately a foot away from each



other, and the quality of water leaving the six pipes is expected to be similar. These discharge locations are collectively designated as E-004 (lat. 38°01'21", long. 122°03'30").

- d. **Waste 005** consists of stormwater runoff from various small areas. Table 2 below describes the discharge locations and pollutants of concern.

**Table 2: Discharge Locations & Potential Pollutants at E-005**

Area	Location	Current E-005 Discharge	Potential Pollutants <sup>1</sup>
U-1TE	East side of Tract 1	None	TPHs, O&G
U-T2N	North end of Tract 2	None	Sed, O&G
U-T2NW	NW corner of Tract 2	E-005-T2NW	Sed, O&G
U-T2S	South end of Tract 2	E-005-T2S(a),(b),(c)	Sed, Metals, O&G
U-T2SW	SW corner of Tract 2	E-005-T2SW	Sed, Metals, O&G, TPHs
U-T3N	North end of Tract 3	None	TPHs, O&G
U-T3SE	SE corner of Tract 3	None	None
U-T3SW	SW corner of Tract 3	None	None
U-T4NW	NW corner of Tract 4	E-005-T4NW	Sed, O&G
U-T4SW	SW corner of Tract 4	E-005-T4SW	Sed, O&G
U-T6NE	NE corner of Tract 6	None	Sed, Metals, O&G, TPHs
U-T6SW	SW corner of Tract 6	None	None
U-AW	West end of Amorco	None	Sed., O&G, TPHs
U-AS	South side of Amorco	E-005-AS <sup>2</sup>	Sed., O&G, TPHs

<sup>1</sup> TPH=Total Petroleum Hydrocarbons, O&G=Oil and Grease, Sed=Sediment

<sup>2</sup> E-005-AS has not discharged in the past five years

### III. GENERAL RATIONALE

The following documents are the bases for the requirements contained in the proposed Order, and are referred to under the specific rationale section of this Fact Sheet.

- Federal Water Pollution Control Act, as amended (hereinafter the **CWA**).
- Federal Code of Regulations, Title 40 - Protection of Environment, Chapter 1, Environmental Protection Agency, Subchapter D, Water Programs, Parts 122-129 (hereinafter referred to as 40 CFR specific part number).
- Water Quality Control Plan, San Francisco Bay Basin, adopted by the Board on June 21, 1995 (hereinafter the **Basin Plan**). The California State Water Resources Control Board (hereinafter the **State Board**) approved the Basin Plan on July 20, 1995 and by California State Office of Administrative Law approved it on November 13, 1995. The Board amended the Basin Plan on January 21, 2004, to adopt California Toxics Rule criteria for eight metals in lieu of existing Basin Plan objectives. The SWRCB and Office of Administrative Law approved this amendment on July 22, 2004, and October 4, 2004, respectively. The Basin Plan defines beneficial uses and contains WQOs for waters of the State, including Suisun Bay.

- California Toxics Rules, Federal Register, Vol. 65, No. 97, May 18, 2000 (hereinafter the **CTR**).
- National Toxics Rules 57 FR 60848, December 22, 1992, as amended (hereinafter the **NTR**).
- State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, March 2, 2000 (hereinafter the **State Implementation Policy**, or **SIP**).
- Quality Criteria for Water, USEPA 440/5-86-001, 1986.
- Ambient Water Quality Criteria for Bacteria – 1986, USEPA440/5-84-002, January 1986.
- Technical Support Document for Water Quality-Based Toxics Control – USEPA/505/2-90-001, March 1991

#### IV. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

##### 1. Recent Plant Performance

Section 402(o) of CWA and 40 CFR § 122.44(l) require that water quality-based effluent limits (**WQBELs**) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current treatment facility performance or on existing permit limitations whichever is more stringent. In determining what constitutes "recent plant performance", best professional judgment (**BPJ**) was used. Effluent monitoring data collected from 2001-2004 are considered representative of recent plant performance. These data specifically account for flow variation due to wet and dry years.

##### 2. Impaired Water Bodies in 303(d) List

On June 6, 2003, U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 2002 303(d) list) was prepared in accordance with Section 303(d) of the Federal Clean Water Act to identify specific waterbodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed as an impaired waterbody. The pollutants impairing Suisun Bay include mercury, nickel, selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. Suisun Bay is also impaired by exotic species. Copper, which was previously identified as impairing Suisun Bay, was not included as an impairing pollutant in the 2002 303(d) list and has been placed on the new Monitoring List.

##### 3. Effluent Limitations

The SIP requires final effluent limitations for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDLs) and associated wasteload allocations (WLAs). The SIP and USEPA regulations also require that final concentration-based WQBELs be included for all pollutants having Reasonable Potential to cause or contribute to an exceedence of applicable water quality standards (having Reasonable Potential or RP). The SIP requires that where the discharger has demonstrated infeasibility to meet the final WQBELs, interim performance-based limitations (IPBLs) or previous permit limitations (whichever is more stringent) be established in the permit, together with a

compliance schedule in effect until final effluent limitations are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control where interim limitations are established.

#### 4. Dilution

The Board believes a conservative 10:1 dilution credit for discharges of non-bioaccumulative pollutants to San Francisco Bay is necessary for protection of beneficial uses. The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for limiting the dilution credit:

- (1) A far-field background station is appropriate because the San Francisco Bay watershed, including the receiving waters, is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.
- (2) Due to the complex hydrology of the San Francisco Bay watershed, a mixing zone cannot be accurately established.
- (3) Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
- (4) The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper and nickel).

The main justification for limiting dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The basis for using 10:1 is that it was granted in the previous permit. This 10:1 limit is also based on the Basin Plan's prohibition number 1, which prohibits discharges like Waste 001 with less than 10:1. The following gives more detailed rationale.

- (1) **Complex Estuarine System Necessitates Far-Field Background** - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

With this in mind, the Yerba Buena Island Station fits the guidance for ambient background in the SIP compared to other stations in the RMP. The SIP states that background data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." Board Staff believe that data from this station are representative of water that will mix with the discharge from Outfalls E-001. Although this station is located near the Golden Gate, it would represent the typical water flushing in and out in the Bay Area each tidal cycle. For most of the Bay Area, the waters represented by this station make up a large part of the receiving water that will mix with the discharge.

- (2) **Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems** - There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Saltwater is heavier than fresh water. Colder saltwater from the ocean flushes in twice a day generally under the warmer fresh river waters that flow out annually. When these waters mix and interact, complex circulation patterns occur due to the different

densities of these waters. These complex patterns occur throughout the estuary but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also change on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.

- (3) **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby discharge sources, nor the cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limitations, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.
- (4) **Mixing Zone Is Further Limited for Persistent Pollutants** - Discharges to the Bay Area waters are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site-specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary... For example, in determining the extent of a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are ... persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel, silver, and zinc). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations."

## 5. Basis for Prohibitions

- a) Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous Order, and BPJ.
- b) Prohibition A.2 (10:1 dilution): This prohibition is based on the Basin Plan. The Basin Plan prohibits discharges of wastewater not receiving a minimum dilution of 10:1 (Chapter 4, Discharge Prohibition No. 1).
- c) Prohibition A.3 (no bypass or overflow): This prohibition is based on the previous Order and BPJ.

## 6. Basis for Effluent Limitations

- a) Effluent Limitations B.1:

The refinery is classified as a “cracking refinery” as defined by the USEPA in 40 CFR § 419.20. Therefore, the USEPA Effluent Guidelines and Standards for Petroleum Refining Point Sources (40 CFR § 419 Subpart B) based on Best Available Technology Economically Achievable (BAT), Best Practicable Control Technology (BPT), and/or Best Conventional Pollutant Control technology (BCT), whichever are more stringent, are applicable to the Discharger.

This section contains production-based mass emission limits for the following constituents: Biochemical oxygen demand (BOD), total suspended solids (TSS), chemical oxygen demand (COD), oil & grease, phenolic compounds, ammonia (expressed as nitrogen), sulfide, and total and hexavalent chromium based on 40 CFR § 419 Subpart B. The application of these guidelines and standards is based on production rates at the refinery. In calculating currently applicable effluent limitations, Board staff used annual facility production rate from 2003. A detailed description of the methodology and data used to calculate the technology-based effluent limitations is included in **Attachment 1**.

The limits for settleable solids are based on existing limits and the Basin Plan, and the concentration limits for oil and grease are based on existing limits and BPJ. The facility’s ability to comply with all of the limits in B.1 has been demonstrated by existing plant performance.

b) Effluent Limitation B.2:

Concentration limits for pollutants contained in storm water and ballast water are based on existing limits, which were developed from the requirements in 40 CFR Part 419.22(e)(2), 419.23(f)(2), and 419.22(c). The Order retains the requirement that the Discharger record storm water and ballast flow on a daily basis and report daily maximum and monthly average flows. These flows are then used along with the above concentration limits to calculate the mass allowances that are added to the mass limits included in B.1.

- c) Effluent Limitation B.3 - Whole Effluent Acute Toxicity: The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limits are necessary to ensure that this objective is protected. The acute toxicity limit is consistent with the previous permit and is based on the Basin Plan Table 4-2, page 4-69.
- d) Effluent Limitation B.4 - Chronic Toxicity: The chronic toxicity limit is consistent with the previous permit and is based on the Basin Plan’s narrative toxicity definition on page 3-4.
- e) Effluent Limitation B.5 - Toxic Substances:
1. Reasonable Potential Analysis (RPA):  
40 CFR 122.44(d)(1)(i) specifies that permits are required to include WQBELs for all pollutants “which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard”. Thus, the fundamental step in determining whether or not a WQBEL is required is to assess a pollutant’s reasonable potential of excursion of its



applicable WQO or WQC. The following section describes the RPA methodology and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

- i) *WQOs and WQC*: The RPA involves the comparison of effluent data with appropriate WQOs including narrative toxicity objectives in the Basin Plan, applicable WQC in the CTR/NTR, and USEPA's 1986 Quality Criteria for Water. The Basin Plan objectives and CTR criteria are shown in **Attachment 2** of this Fact Sheet.
- ii) *Methodology*: The RPA is conducted using the method and procedures prescribed in Section 1.3 of the SIP, and guidance in the USEPA TSD for pollutants not subject to the SIP. Board staff have analyzed the effluent and background data and the nature of facility operations to determine if the discharge has reasonable potential to cause or contribute to exceedances of applicable WQOs or WQC. **Attachment 2** of this Fact Sheet shows the step-wise process.
- iii) *Effluent and background data*: The RPA is based on effluent data collected by the Discharger from January 2001 through July 2004 (see **Attachment 2** of this Fact Sheet). Water quality data collected from San Francisco Bay at the Yerba Buena Island monitoring station through the RMP in 1993 to 2001 were reviewed to determine the maximum observed background values. The RMP station at Yerba Buena Island located in the Central Bay has been sampled for most of the inorganic and some of the organic toxic pollutants; however, not all the constituents listed in the CTR were analyzed by the RMP during this time. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. This study summarizes the monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2001 for inorganics and organics at the Yerba Buena Island, and additional data from the BACWA *Ambient Water Monitoring Interim Report* for the Yerba Buena Island RMP station.
- iv) *RPA determination*: The RPA results are shown below in **Table 3** and **Attachment 2** of this Fact Sheet. Pollutants that exhibit RP are copper, lead, mercury, nickel, selenium, thallium, cyanide, dioxin (dioxin-TEQ), and PCBs.

**Table 3. Summary of Reasonable Potential Results**

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL <sup>1</sup> (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results <sup>2</sup>
2	Arsenic	10	36	2.46	N
4	Cadmium	0.9	1.4	0.1268	N
5b	Chromium (VI)	10	11	4.4	N
6	Copper	20	3.7	2.45	Y



# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL <sup>1</sup> (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results <sup>2</sup>
7	Lead	3.5	1.2	0.8	Y
8	Mercury	0.04	0.025	0.0064	Y
9	Nickel	87	8.3	3.7	Y
10	Selenium	41	5	0.39	Y
11	Silver	0.05	1.1	0.0683	N
12	Thallium	13	6.3	0.21	Y
13	Zinc	26	64	4.6	N
14	Cyanide	28	1	NA	Y
16	2,3,7,8-TCDD	<3.6*E-7	1.4x10 <sup>-8</sup>	<3.5*E-7	N
	Dioxin-TEQ	4.2*E-7	1.4E-08	7.1*E-8	Y
17	Acrolein	5	780	NA	N
18	Acrylonitrile	2	0.66	NA	N
19	Benzene	0.5	71	NA	N
20	Bromoform	0.5	360	NA	N
21	Carbon Tetrachloride	0.5	4.4	NA	N
22	Chlorobenzene	0.5	21000	NA	N
23	Chlordibromomethane	0.5	34	NA	N
24	Chloroethane	0.5	NA	NA	Uo
25	2-Chloroethylvinyl Ether	1	NA	NA	Uo
26	Chloroform	1	NA	NA	Uo
27	Dichlorobromomethane	0.5	46	NA	N
28	1,1-Dichloroethane	0.5	NA	NA	Uo
29	1,2-Dichloroethane	0.5	99	NA	N
30	1,1-Dichloroethylene	0.5	3.2	NA	N
31	1,2-Dichloropropane	0.5	39	NA	N
32	1,3-Dichloropropylene	0.5	1700	NA	N
33	Ethylbenzene	0.5	29000	NA	N
34	Methyl Bromide	0.5	4000	NA	N
35	Methyl Chloride	0.5	NA	NA	Uo
36	Methylene Chloride	0.5	1600	NA	N
37	1,1,2,2-Tetrachloroethane	0.5	11	NA	N
38	Tetrachloroethylene	0.5	8.85	NA	N
39	Toluene	0.5	200000	NA	N
40	1,2-Trans-Dichloroethylene	0.5	140000	NA	N
41	1,1,1-Trichloroethane	0.5	NA	NA	Uo
42	1,1,2-Trichloroethane	0.5	42	NA	N
43	Trichloroethylene	0.5	81	NA	N
44	Vinyl Chloride	0.5	525	NA	N
45	Chlorophenol	2	400	NA	N
46	2,4-Dichlorophenol	1	790	NA	N
47	2,4-Dimethylphenol	2	2300	NA	N
48	2-Methyl-4,6-Dinitrophenol	5	765	NA	N
49	2,4-Dinitrophenol	5	14000	NA	N
50	2-Nitrophenol	5	NA	NA	Uo
51	4-Nitrophenol	5	NA	NA	Uo
52	3-Methyl-4-Chlorophenol	1	NA	NA	Uo
53	Pentachlorophenol	1	7.9	NA	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL <sup>1</sup> (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results <sup>2</sup>
55	2,4,6-Trichlorophenol	5	6.5	NA	N
56	Acenaphthene	0.1	2700	0.0015	N
57	Acenaphthylene	0.1	NA	0.00053	Uo
58	Anthracene	0.1	110000	0.005	N
59	Benzidine	5	0.00054	NA	N
60	Benzo(a)Anthracene	0.1	0.049	0.0053	N
61	Benzo(a)Pyrene	0.1	0.049	0.00029	N
62	Benzo(b)Fluoranthene	0.1	0.049	0.0046	N
63	Benzo(ghi)Perylene	0.1	NA	0.0027	Uo
64	Benzo(k)Fluoranthene	0.05	0.049	0.0015	N
65	Bis(2-Chloroethoxy)Methane	5	NA	NA	Uo
66	Bis(2-Chloroethyl)Ether	1	1.4	NA	N
67	Bis(2-Chloroisopropyl)Ether	2	170000	NA	N
68	Bis(2-Ethylhexyl)Phthalate	5	5.9	NA	N
69	4-Bromophenyl Phenyl Ether	5	NA	NA	Uo
70	Butylbenzyl Phthalate	5	5200	NA	N
71	2-Chloronaphthalene	5	4300	NA	N
72	4-Chlorophenyl Phenyl Ether	5	NA	NA	Uo
73	Chrysene	1	0.049	0.0024	N
74	Dibenzo(a,h)Anthracene	1	0.049	0.00064	N
75	1,2 Dichlorobenzene	0.5	17000	NA	N
76	1,3 Dichlorobenzene	0.5	2600	NA	N
77	1,4 Dichlorobenzene	0.5	2600	NA	N
78	3,3-Dichlorobenzidine	5	0.077	NA	N
79	Diethyl Phthalate	2	120000	NA	N
80	Dimethyl Phthalate	2	2900000	NA	N
81	Di-n-Butyl Phthalate	5	12000	NA	N
82	2,4-Dinitrotoluene	5	9.1	NA	N
83	2,6-Dinitrotoluene	5	NA	NA	Uo
84	Di-n-Octyl Phthalate	5	NA	NA	Uo
85	1,2-Diphenylhydrazine	1	0.54	NA	N
86	Fluoranthene	0.1	370	0.011	N
87	Fluorene	0.1	14000	0.00208	N
88	Hexachlorobenzene	1	0.00077	0.0000202	N
89	Hexachlorobutadiene	1	50	NA	N
90	Hexachlorocyclopentadiene	5	17000	NA	N
91	Hexachloroethane	1	8.9	NA	N
92	Indeno(1,2,3-cd) Pyrene	0.1	0.049	0.004	N
93	Isophorone	1	600	NA	N
94	Naphthalene	0.1	NA	0.0023	Uo
95	Nitrobenzene	1	1900	NA	N
96	N-Nitrosodimethylamine	5	8.1	NA	N
97	N-Nitrosodi-n-Propylamine	5	1.4	NA	N
98	N-Nitrosodiphenylamine	1	16	NA	N
99	Phenanthrene	0.1	NA	0.0061	Uo
100	Pyrene	0.1	11000	0.0051	N
101	1,2,4-Trichlorobenzene	5	NA	NA	Uo

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL <sup>1</sup> (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results <sup>2</sup>
102	Aldrin	0.01	0.00014	NA	N
103	alpha-BHC	0.01	0.013	NA	N
104	beta-BHC	0.01	0.046	NA	N
105	gamma-BHC	0.01	0.063	NA	N
106	delta-BHC	0.01	NA	NA	Uo
107	Chlordane	0.02	0.00059	0.00018	N
108	4,4'-DDT	0.01	0.00059	0.000066	N
109	4,4'-DDE	0.01	0.00059	0.00069	N
110	4,4'-DDD	0.01	0.00084	0.000313	N
111	Dieldrin	0.01	0.00014	0.000264	N
112	alpha-Endosulfan	0.01	0.0087	0.000031	N
113	beta-Endosulfan	0.01	0.0087	0.000069	N
114	Endosulfan Sulfate	0.01	240	0.0000819	N
115	Endrin	0.01	0.0023	0.000036	N
116	Endrin Aldehyde	0.01	0.81	NA	N
117	Heptachlor	0.01	0.00021	0.000019	N
118	Heptachlor Epoxide	0.01	0.00011	0.000094	N
119-125	PCBs	0.000148	0.00017	NA	Y
126	Toxaphene	0.5	0.0002	NA	N
	Tributyltin	NA	0.005	NA	Ub, Ud

1) Maximum Effluent Concentration (MEC) in bold is the actual detected MEC, otherwise the MEC shown is the minimum detection level.

NA = Not Available (there is not monitoring data for this constituent).

2) RP = Yes, if either MEC or Background > WQO/WQC.

RP = No, if (1) both MEC and background < WQO/WQC or (2) no background and all effluent data non-detect, or no background and MEC < WQO/WQC (per WQ 2001-16 Napa Sanitation Remand)

RP = Ud (undetermined due to lack of effluent monitoring data).

RP = Uo (undetermined if no objective promulgated).

RP = Ub (undetermined due to lack of background data)

v) *Pollutants with no Reasonable Potential:* WQBELs are not included in the Order for constituents that do not have Reasonable Potential to cause or contribute to exceedance of applicable WQOs or WQC. However, monitoring for those pollutants is still required, under the provisions of the Board's August 6, 2001 Letter. If concentrations of these constituents are found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water.

vi) *Permit reopener:* The permit includes a reopener provision to allow numeric effluent limitations to be added for any constituent that in the future exhibits Reasonable Potential to cause or contribute to exceedance of a WQO or WQC. This determination, based on monitoring results, will be made by the Board.

2. Final Water Quality-Based Effluent Limits: The final WQBELs were developed for the toxic and priority pollutants that were determined to have reasonable potential to cause or contribute to exceedances of the WQOs or WQC. Final effluent limitations were calculated based on appropriate WQOs/WQC, background concentrations at the Yerba

Buena Island and Richardson Bay RMP Stations, a maximum dilution ratio of 10:1 (for non-bioaccumulative pollutants), and the appropriate procedures specified in Section 1.4 of the SIP or USEPA TSD (See **Attachment 3** of this Fact Sheet). For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. The WQO or WQC used for each pollutant with reasonable potential is indicated in Table 4 below as well as in **Attachment 3**.

**Table 4. Water Quality Objectives/Criteria for Pollutants with RP**

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Human Health WQC (µg/L)	Basis of Lowest WQO /WQC Used in RP
Copper	3.7	5.8	--	CTR
Lead	1.2	30	--	CTR
Mercury	0.025	2.1	0.051	BP
Nickel	8.3	75	4,600	CTR
Selenium	5	20	--	NTR
Thallium	--	--	6.3	CTR
Cyanide	1	1	22,000	NTR
TCDD TEQ	--	--	$1.4 \times 10^{-8}$	BP
PCBs (sum)	0.014	--	0.00017	CTR

- Feasibility Evaluation: The Discharger submitted infeasibility to comply reports on February 11, 2005, for selenium, cyanide, and dioxin (Dioxin TEQ). For constituents that Board staff could perform a meaningful statistical analysis (i.e., selenium), it used self-monitoring data from January 2001- July 2004 to compare the mean, 95<sup>th</sup> percentile, and 99<sup>th</sup> percentile with the long-term average (LTA), AMEL, and MDEL to confirm if it is feasible for the Discharger to comply with WQBELs. If the LTA, AMEL, and MDEL all exceed the mean, 95<sup>th</sup> percentile, and 99<sup>th</sup> percentile, it is feasible for the Discharger to comply with WQBELs. Table 5 below shows these comparisons in µg/L

**Table 5. Summary of Feasibility Analysis**

Constituent	Median / LTA	95 <sup>th</sup> / AMEL	99 <sup>th</sup> / MDEL	Feasible to Comply
Selenium <sup>1</sup>	10 > 2.9	20 > 4.2	29 > 7.8	No

<sup>1</sup> Selenium data does not fit a normal distribution. Therefore, the percentiles shown are based on data representing the whole population as opposed to a subset of the population.

For PCBs compliance with the final WQBELs cannot be determined at this time as the minimum levels (MLs) are higher than the final calculated WQBELs. For cyanide and dioxins and furans compounds it was not possible to perform a robust statistical analysis due to the number of nondetects. For cyanide, the Board determined that it infeasible for the Discharger to comply with final WQBELs since the maximum effluent concentration exceeds the AMEL. For dioxin-TEQ, the Board used the numeric limits calculated by the SIP methodology as guidance for determining if the Discharger can comply with numeric WQBELs. Even though the SIP does not apply to dioxin-TEQ, this comparison is reasonable since the methodology for calculating final WQBELs in the SIP is in part based on the TSD.

In this case, the Board determined that it is infeasible for the Discharger to comply with WQBELs for Dioxin TEQ since the maximum effluent concentration exceeds the AMEL.

Table 6 below summarizes the calculated WQBELs, and the feasibility to comply analysis for all pollutants with effluent limitations. The WQBELs calculation is attached as Attachment 3 of this Fact Sheet.

**Table 6. Final WQBELs and Feasibility to Comply**

Pollutant	MDEL µg/L	AMEL µg/L	Feasible to Comply?
Copper	24	13	Yes
Lead	7.8	3.7	Yes
Mercury	0.044	0.019	Yes
Nickel	77	42	Yes
Selenium	7.8	4.2	No
Cyanide	6.4	3.2	No
Thallium	120	61	Yes
TCDD TEQ	0.000000028	0.000000014	No
PCBs (sum)	0.00034	0.00017	No

4. **Interim Concentration Limits and Compliance Schedules:** Interim effluent limitations were derived for those constituents (selenium, cyanide, dioxin TEQ, and PCBs) for which the Discharger has shown infeasibility of complying with the respective final limitations and has demonstrated that compliance schedules are justified based on the Discharger's source control and pollution minimization efforts in the past, and continued efforts in the present and future. The interim effluent concentration limitations for selenium, cyanide, and TCDD TEQ are based on the previous permit effluent limitation. For PCBs there were insufficient effluent data (i.e., detected values) to develop statistically valid performance-based interim limits. Therefore, for PCBs the interim effluent concentration limits are based on the minimum levels contained in the SIP. These interim limits are discussed in more detail below.

This permit establishes compliance schedules until May 17, 2010, for PCBs, until April 27, 2010 for cyanide and selenium, and until July 1, 2010 for TCDD-TEQ. Since these compliance schedules are within the effective date of the permit, this Order includes final WQBELs. Attachment 4 provides the general basis for the above compliance schedules.

- i. **Selenium** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for selenium since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 4.2 µg/L and MDEL of 7.8 µg/L) will be infeasible to meet. Self-monitoring data from January 2001- July 2004 indicate that effluent selenium concentrations ranged from <1 µg/L to 41 µg/L (180 samples). Since selenium data did not fit a normal distribution, it was not possible to perform a meaningful statistical evaluation of current treatment performance. Therefore, interim limits for selenium are

the same as the limits included in the previous Order and are based on a Settlement Agreement between the Western States Petroleum Association (WSPA) and the Board. The previous permit contained a daily maximum concentration limit of 50 µg/L, and an annual average mass emission limit of 1.0 lbs/day. These interim limits will remain in effect until April 27, 2010, or until the Board amends the limitation based on additional data or a TMDL.

- ii. **Cyanide** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for cyanide since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 3.2 µg/L and MDEL of 6.4 µg/L) will be infeasible to meet. Self-monitoring data from January 2001- July 2004 indicate that effluent cyanide concentrations ranged from < 3 µg/L to 28 µg/L (177 samples). Board staff could not perform a meaningful statistical analysis on these data because it contained too many nondetects. Therefore, the previous permit limitation of 25 µg/L is established in this Order as the interim limitation, and will remain in effect until April 27, 2010, or until the Board amends the limitation based on additional data or SSOs
  - iii. **PCBs (sum)** - Further Discussion and Rationale for Interim Effluent Limitations: Interim effluent limitations are required for PCBs because compliance with the final WQBELs (AMEL of 0.00017 µg/L and MDEL of 0.00034 µg/L) cannot be determined at this time as the MLs are higher than the final calculated WQBELs. The Interim limitation is therefore established at the respective MLs. The interim limitations are 0.5 µg/L for each PCB. This interim limits shall remain in effect until May 17, 2010, or until the Board amends the limitation based on WLAs in the TMDL for PCBs.
  - iv. **Dioxin-TEQ** – Further Discussion and Rationale for Interim Effluent Limitation: While the SIP does not apply to dioxin-TEQ, it is reasonable to use final WQBELs calculated in accordance with the SIP, as guidance for determining if it is feasible for the Discharger to comply with final limits. For dioxin-TEQ, an interim effluent limitation is required since the Discharger cannot immediately comply with an AMEL of 0.014 pg/L, or MDEL of 0.028 pg/L. Statistical analyses indicate that the 99.87<sup>th</sup> percentile of dioxin-TEQ from 2000 to 2004 is 0.82 pg/L (based on the five congeners regularly detected, which include: 1,2,3,4,6,7,8 HpCDD, OCDD, 1,2,3,4,6,7,8 HpCDF, 1,2,3,4,7,8,9 HpCDF, and OCDF). The previous permit included an interim limitation of 0.65 pg/L as a monthly average, which is more stringent than the 99.87<sup>th</sup> percentile of the recent effluent data. Therefore, the previous permit limitation of 0.65 pg/L (for the five regularly detected congeners) is established in this Order as the interim limitation, expressed as a monthly average limitation. This interim limitation shall remain in effect until July 1, 2010, at which time the Discharger shall comply with the WLA in a TMDL, or no net loading if there is no TMDL. This approach is consistent with CBE v. State Water Resources Control Board, et al., 109 Cal. App.4th 1089 (2003), in which the court ruled that final WQBELs are not required to be numeric.
- f) **Effluent Limitation B.6 – Selenium Interim Mass Limit:** As mentioned above, this Order includes an interim mass emission limit for selenium of 1.0 lbs/day. This limitation is based on a Settlement Agreement between WSPA and the Board.



- g) **Effluent Limitation B.7 – Total Coliform Organisms Limit:** The purpose of this effluent limitation is to ensure adequate disinfection of the discharge in order to protect beneficial uses of the receiving waters. Effluent limits are based on water quality objectives for bacteriological parameters for receiving water beneficial uses. Water quality objectives are given in terms of parameters, which serve as surrogates for pathogenic organisms. The traditional parameter for this purpose is coliform bacteria, either as total coliform or as fecal coliform. The Basin Plan's Table 4-2 (pg. 4-69) and its footnotes allow fecal coliform limitations to be substituted for total coliform limitations provided that the Discharger conclusively demonstrates "through a program approved by the Board that such substitution will not result in unacceptable adverse impacts on the beneficial uses of the receiving waters." Until the Discharger undertakes a bacteriological study to conclusively demonstrate that substitution of fecal coliform for total coliform limits would be protective of the beneficial uses of the receiving water, the coliform effluent limitation will continue to be expressed as total coliform. Total coliform limits are:
- i. The moving median value for the Most Probable Number (MPN) of total coliform bacteria in five (5) consecutive samples shall not exceed 240 MPN/100 ml; and,
  - ii. Any single sample shall not exceed 10,000 MPN/100 ml.
- h) **Effluent Limitation B.8 – Residual Chlorine Limit:** This limit is a technology-based limit representative of, and intended to ensure, adequate and reliable secondary level wastewater treatment. This limit is based on the Basin Plan (Chapter 4, pg 4-8, and Table 4-2, at pg 4-69).
- i) **Effluent Limitation B.9 – pH Limit:** This effluent limit is a standard secondary treatment requirement and is unchanged from the existing permit. The limit is based on the Basin Plan (Chapter 4, Table 4-2), which is derived from federal requirements (40 CFR 133.102). This is an existing permit effluent limitation and compliance has been demonstrated by existing plant performance.
- j) **Effluent Limitation B.10 – Stormwater Limits at Outfalls E-003, E-004, and E-005:** These limits are based on based on 40 CFR § 419 Subpart B.
- k) **Effluent Limitation B.11 – Credit for Recycled Water Use:** This credit is to encourage the Discharger to use reclaimed water provided it will not cause acute toxicity to aquatic life.

## **7. Basis for Receiving Water Limitations**

- a) Receiving water limitations C.1, C.2, and C.3 (conditions to be avoided): These limits are based on the previous Order and the narrative/numerical objectives contained in Chapter 3 of the Basin Plan, page 3-2 – 3-5.
- b) Receiving water limitation C.4 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

## **8. Basis for Self-Monitoring Requirements**

The SMP includes monitoring at the outfalls for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For a number of constituents that the Board has granted interim limits (selenium, and cyanide), this Order contains weekly monitoring. The exceptions to this requirement are dioxin TEQ, and PCBs. For dioxins, due to the considerable costs, high detection limits, and ambient nature of the source, this Order requires quarterly monitoring. For

PCBs due to the considerable costs and the non-detects the Discharger has found, this Order requires twice yearly monitoring, which is also consistent with the SIP. Further, this Order requires monthly monitoring of mercury, copper, nickel, lead, and thallium to demonstrate compliance with final effluent limitations. In lieu of near field discharge specific ambient monitoring, it is acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the August 6, 2001 letter, and the RMP.

## 9. Basis for Provisions

- a) Provisions D.1. (Permit Compliance and Rescission of Previous Permit): Time of compliance is based on 40 CFR 122. The basis of this Order superceding and rescinding the previous permit is 40 CFR 122.46.
- b) Provision D.2 (Dioxins and Furans Accelerated Monitoring): This provision requires the Discharger to accelerate monitoring and submit a technical report if it detects dioxin and furan congeners that are not regulated under this Order. The purpose of this provision is to ensure that the Discharger will implement corrective measures if its performance declines for dioxin TEQ.
- c) Provision D.3 (Mass and Concentration Credits). This provision is necessary to protect beneficial uses identified in the Basin Plan (the Discharger must ensure that granting it pollutant credits for the use of recycled water will not cause acute toxicity).
- d) Provision D.4. (Storm Water Pollution Prevention Plan and Annual Report): This provision, is based on and consistent with Basin Plan objectives, statewide storm water requirements for industrial facilities, and applicable USEPA regulations.
- e) Provision D.5 (Effluent Characterization for Selected Constituents): This provision establishes monitoring requirements as stated in the Board's August 6, 2001 Letter under Effluent Monitoring for major dischargers. Interim and final reports shall be submitted to the Board in accordance with the schedule specified in the August 6, 2001 Letter. This provision is based on the Basin Plan and the SIP.
- f) Provision D.6 (Receiving Water Monitoring). This provision, which requires the Discharger to continue to conduct receiving water monitoring is based on the previous Order and the Basin Plan.
- g) Provision D.7 (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan, page 4-25 – 4-28, and the SIP, Section 2.1, Compliance Schedules.
- h) Provision D.8 (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limits for acute toxicity will be demonstrated. Conditions include the use of flow through bioassays with rainbow trout, in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms*, 5<sup>th</sup> Edition. These conditions are based on the effluent limits for acute toxicity given in the Basin Plan, Chapter 4, and BPJ.
- i) Provision D.9 (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative WQO for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating

accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to San Francisco Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution ratio of 10:1. This provision also requires the Discharger to conduct a screening phase monitoring requirement and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. New testing species and/or test methodology may be available before the next permit renewal. Characteristics, and thus toxicity, of the process wastewater may also have been changed during the life of the permit. This screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative WQO for toxicity, Basin Plan effluent limitations for chronic toxicity (Basin Plan, Chapter 4), U.S. EPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

- j) Provision D.10 (Contingency Plan Update): This provision is based on the requirements stipulated in Board Resolution No. 74-10.
- k) Provision D.11 (Dilution Study): This provision is necessary to ensure that the Discharger's deepwater diffuser achieves a minimum initial dilution of at least 10:1, as required by the Basin Plan.
- l) Provision D.12 (Collection System Maintenance): This provision, based on the Basin Plan, is necessary to document that the Discharger implements appropriate operation and maintenance of its collection system to avoid spills to the maximum extent feasible.
- m) Provision D.13 (Actions for Compliance Schedule Pollutants): This provision, based on the SIP, requires that the Discharger participate in the development of a TMDL or SSO for cyanide, selenium, PCBs, and dioxin-TEQ. In accordance with Section 2.1 of the SIP, and Chapter 4 of the Basin Plan, for the Board to authorize compliance schedules in a permit the Discharger must, in part, propose a schedule for additional or future source control measures, pollution minimization actions, or waste treatment. In the case of cyanide, selenium, PCBs, and dioxin-TEQ, the Discharger indicates that it proposes to achieve compliance with final limits through the SSO or TMDL process. Therefore, annual reporting on Discharger's efforts to facilitate SSO or TMDL development along with implementation of its Pollution Minimization Plan (required by Provision D.7) satisfy the intent of Section 2.1 of the SIP. In the event TMDL(s) or SSO(s) are not developed for selenium, cyanide, or PCBs by July 1, 2009, this provision also requires the Discharger to submit a schedule that documents how it will further reduce pollutant concentrations to ensure compliance with the final limits. Additionally, in the absence of a TMDL for dioxin-TEQ, this provision requires that the Discharger propose a mass offset program, by no later than July 1, 2009, to achieve no net loading by July 1, 2010.
- n) Provision D.14 (Self-Monitoring Program): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits issued by the Board, including this Order. It contains definitions of terms, specifies general sampling and analytical protocols, and sets out requirements for reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains a sampling program specific for the facility. It defines the sampling stations and

frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs for them.

- o) Provision D.15 (Standard Provisions and Reporting Requirements): The purpose of this provision is to require compliance with the standard provisions and reporting requirements given in this Board's document titled *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (the Standard Provisions), or any amendments thereafter. That document is incorporated in the permit as an attachment to it. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in the Standard Provisions, the permit specifications shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.
- p) Provision D.16 (Change in Control or Ownership): This provision is based on 40 CFR 122.61.
- q) Provision D.17 (Permit Reopener): This provision is based on 40 CFR 123.
- r) Provision D.18 (Permit Expiration and Reapplication): This provision is based on 40 CFR 122.46 (a).

## **V. WASTE DISCHARGE REQUIREMENT APPEALS**

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

## **VI. ATTACHMENTS**

**Attachment 1:** Calculations for Production-Based Effluent Limitations

**Attachment 2:** RPA Results for Priority Pollutants at E-001

**Attachment 3:** Calculation of Final WQBELs at E-001

**Attachment 4:** General Basis for Compliance Schedules

## ATTACHMENT 1

### CALCULATIONS FOR PRODUCTION-BASED BPT, BCT, AND BAT EFFLUENT LIMITATIONS FOR TESORO GOLDEN EAGLE REFINERY

#### References:

- 1) 40 CFR § 419 Subpart B Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category (Cracking Subcategory)
- 2) Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category
- 3) Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry
- 4) NPDES Application for Permit Reissuance (August 2004)
- 5) Refinery Production Data 1999 – 2003, provided by the facility (Data from 2003 was selected as the high year based on average production rates and was used in calculations)

#### Production-Based Effluent Limitations

**STEP 1:** Determine the size factor based on the refinery feedstock rate. Based on 40 CFR § 419 Subpart B, a total refinery throughput of 157 kbb/d results in a

$$\text{SIZE FACTOR} = 1.41$$

**STEP 2:** Determine the process configuration based on the process rates:

Process	Process Feedstock Rate (kbb/d)	Fraction of Total Throughput	Weight Factor	Process Configuration
Total Refinery Throughput = 157 kbb/d				
CRUDE:				
Atmospheric Distillation	149.6	0.953		
Vacuum Crude Distillation	56.9	0.362		
Desalting	149.6	0.953		
TOTAL	356	2.27	1	2.27
CRACKING & COKING:				
Fluid Catalytic Cracking	66	0.42		
Hydrocracking	27.3	0.174		
Coking	42.7	0.272		
Hydrotreating	128	0.815		
TOTAL	264	1.68	6	10.08
TOTAL PROCESS CONFIGURATION =				12.35

(kbb/d = Thousand Barrels per day)

**STEP 3:** Determine the process factor. Based on 40 CFR § 419 Subpart B, a total process configuration of 12.35 results in a

$$\text{PROCESS FACTOR} = 1.89$$

**STEP 4:** Based on 40 CFR § 419.22(a), 419.23(a), and 419.24(a), the BPT/BAT/BCT effluent limit is equal to  
(THROUGHPUT) X (SIZE FACTOR) X (PROCESS FACTOR) X (EFFLUENT LIMIT FACTOR)

$$\begin{aligned}\text{EFFLUENT LIMIT} &= (157)(1.41)(1.89)(\text{Effluent Limit Factor}) \\ &= (418.4)(\text{Effluent Limit Factor})\end{aligned}$$



Pollutant	Effluent Limit in 40 CFR 419B						Multiplier	Final Limit Calculated						Final Limit	
	BPT		BAT		BCT			BPT		BAT		BCT			
	Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg		Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg
	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl		lb/d	lb/d	lb/d	lb/d	lb/d	lb/d	lb/d	lb/d
3OD <sub>5</sub>	9.9	5.5			9.9	5.5	418.4	4142	2301			4142	2301	4142	2301
SS	6.9	4.4			6.9	4.4	418.4	2887	1841			2887	1841	2887	1841
3OD	74	38.4	74	38.4			418.4	30962	16067	30962	16067			30962	16067
3&G	3	1.6			3	1.6	418.4	1255	669			1255	669	1255	669
Phenols (4AAP)*	0.074	0.036					418.4	31	15					31	15
NH <sub>3</sub> -N	6.6	3	6.6	3			418.4	2761	1255	2761	1255			2761	1255
Sulfide	0.065	0.029	0.065	0.029			418.4	27	12	27	12			27	12
Total Cr	0.15	0.088					418.4	63	37					63	37
Hex Cr	0.012	0.0056					418.4	5.0	2.3					5.0	2.3

\*The BPT limits for these constituents are applicable only if they are more stringent than BAT limits (see STEP 5 below).

**STEP 5:** Calculate Amended BAT limits pursuant to 40 CFR § 419.43, for phenolic compounds (4AAP), total and hexavalent chromium. The effluent limit is equal to the sum of the products of each effluent limitation factor times the applicable process feedstock rate.

Pollutant	Process Category	BAT Effluent Limit Factors (lb/kbbbl)		Feedstock (kbbbl/d)	Effluent Limitation (lb/d)	
		Daily Max.	30-d Average		Daily Max.	30-d Average
Phenolic Compounds (4AAP)	Crude	0.013	0.003	356.1	4.63	1.07
	Cracking & Coking	0.147	0.036	264	38.81	9.50
	Reforming & Alkylation	0.132	0.032	36.3	4.79	1.16
	TOTAL (kg/d)				48.23	11.73
Total Chromium	Crude	0.011	0.004	356.1	3.92	1.42
	Cracking & Coking	0.119	0.041	264	31.42	10.82
	Reforming & Alkylation	0.107	0.037	36.3	3.88	1.34
	TOTAL (kg/d)				39.22	13.59
Hexavalent Chromium	Crude	0.0007	0.0003	356.1	0.25	0.11
	Cracking & Coking	0.0076	0.0034	264	2.01	0.90
	Reforming & Alkylation	0.0069	0.0031	36.3	0.25	0.11
	TOTAL (kg/d)				2.51	1.12
					1.14	0.51

**STEP 6:** Compare Amended BAT limitations for phenolic compounds (4AAP), total chromium, and hexavalent chromium with BPT limitations.

Except for daily maximum limitation for phenolic compounds, the above BAT limits are more stringent than the BPT limits calculated in STEP 4. Therefore, for these constituents, the above BAT limits, the BPT limit for phenolic compounds are considered for inclusion in the permit.



Tesoro Golden Eagle Refinery  
Attachment 2  
Reasonable Potential Analysis Results

[illegible]

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15	Step 16	Step 17	Step 18	Step 19	Step 20	Step 21	Step 22	Step 23	Step 24	Step 25	Step 26	Step 27	Step 28	Step 29	Step 30	Step 31	Step 32	Step 33	Step 34	Step 35	Step 36	Step 37	Step 38	Step 39	Step 40	Step 41	Step 42	Step 43	Step 44	Step 45	Step 46	Step 47	Step 48	Step 49	Step 50	Step 51	Step 52	Step 53	Step 54	Step 55	Step 56	Step 57	Step 58	Step 59	Step 60	Step 61	Step 62	Step 63	Step 64	Step 65	Step 66	Step 67	Step 68	Step 69	Step 70	Step 71	Step 72	Step 73	Step 74	Step 75	Step 76	Step 77	Step 78	Step 79	Step 80	Step 81	Step 82	Step 83	Step 84	Step 85	Step 86	Step 87	Step 88	Step 89	Step 90	Step 91	Step 92	Step 93	Step 94	Step 95	Step 96	Step 97	Step 98	Step 99	Step 100	Step 101	Step 102	Step 103	Step 104	Step 105	Step 106	Step 107	Step 108	Step 109	Step 110	Step 111	Step 112	Step 113	Step 114	Step 115	Step 116	Step 117	Step 118	Step 119	Step 120	Step 121	Step 122	Step 123	Step 124	Step 125	Step 126	Step 127	Step 128	Step 129	Step 130	Step 131	Step 132	Step 133	Step 134	Step 135	Step 136	Step 137	Step 138	Step 139	Step 140	Step 141	Step 142	Step 143	Step 144	Step 145	Step 146	Step 147	Step 148	Step 149	Step 150	Step 151	Step 152	Step 153	Step 154	Step 155	Step 156	Step 157	Step 158	Step 159	Step 160	Step 161	Step 162	Step 163	Step 164	Step 165	Step 166	Step 167	Step 168	Step 169	Step 170	Step 171	Step 172	Step 173	Step 174	Step 175	Step 176	Step 177	Step 178	Step 179	Step 180	Step 181	Step 182	Step 183	Step 184	Step 185	Step 186	Step 187	Step 188	Step 189	Step 190	Step 191	Step 192	Step 193	Step 194	Step 195	Step 196	Step 197	Step 198	Step 199	Step 200	Step 201	Step 202	Step 203	Step 204	Step 205	Step 206	Step 207	Step 208	Step 209	Step 210	Step 211	Step 212	Step 213	Step 214	Step 215	Step 216	Step 217	Step 218	Step 219	Step 220	Step 221	Step 222	Step 223	Step 224	Step 225	Step 226	Step 227	Step 228	Step 229	Step 230	Step 231	Step 232	Step 233	Step 234	Step 235	Step 236	Step 237	Step 238	Step 239	Step 240	Step 241	Step 242	Step 243	Step 244	Step 245	Step 246	Step 247	Step 248	Step 249	Step 250	Step 251	Step 252	Step 253	Step 254	Step 255	Step 256	Step 257	Step 258	Step 259	Step 260	Step 261	Step 262	Step 263	Step 264	Step 265	Step 266	Step 267	Step 268	Step 269	Step 270	Step 271	Step 272	Step 273	Step 274	Step 275	Step 276	Step 277	Step 278	Step 279	Step 280	Step 281	Step 282	Step 283	Step 284	Step 285	Step 286	Step 287	Step 288	Step 289	Step 290	Step 291	Step 292	Step 293	Step 294	Step 295	Step 296	Step 297	Step 298	Step 299	Step 300	Step 301	Step 302	Step 303	Step 304	Step 305	Step 306	Step 307	Step 308	Step 309	Step 310	Step 311	Step 312	Step 313	Step 314	Step 315	Step 316	Step 317	Step 318	Step 319	Step 320	Step 321	Step 322	Step 323	Step 324	Step 325	Step 326	Step 327	Step 328	Step 329	Step 330	Step 331	Step 332	Step 333	Step 334	Step 335	Step 336	Step 337	Step 338	Step 339	Step 340	Step 341	Step 342	Step 343	Step 344	Step 345	Step 346	Step 347	Step 348	Step 349	Step 350	Step 351	Step 352	Step 353	Step 354	Step 355	Step 356	Step 357	Step 358	Step 359	Step 360	Step 361	Step 362	Step 363	Step 364	Step 365	Step 366	Step 367	Step 368	Step 369	Step 370	Step 371	Step 372	Step 373	Step 374	Step 375	Step 376	Step 377	Step 378	Step 379	Step 380	Step 381	Step 382	Step 383	Step 384	Step 385	Step 386	Step 387	Step 388	Step 389	Step 390	Step 391	Step 392	Step 393	Step 394	Step 395	Step 396	Step 397	Step 398	Step 399	Step 400	Step 401	Step 402	Step 403	Step 404	Step 405	Step 406	Step 407	Step 408	Step 409	Step 410	Step 411	Step 412	Step 413	Step 414	Step 415	Step 416	Step 417	Step 418	Step 419	Step 420
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Beginning	Conductance name			Human Health ECA	CV, by SIP Guidance	Acute ECA (Sigma*2)	Acute ECA (Sigma*2) Sigma	Chronic ECA (Sigma*2)	Chronic ECA (Sigma*2) Sigma	Acute ECA Multiplier	Chronic ECA Multiplier	Acute LTA	Chronic LTA	AMEL Sigma*2	MODEL Multiplier	AMEL Multiplier	MODEL	AMEL	MODEL Human Health	AMEL Human Health	Daily Maximum	Monthly Average
	A	B	C																			
1	Aspirin																					
2	Aspirin *																					
3	Beryllium																					
4	Cadmium *																					
5a	Chromium [VI]																					
5b	Copper *																					
6	Copper *																					
7	Mercury (dissolved)																					
8	Nickel *																					
9	Nickel *																					
10	Selenium (total dissolved)																					
11	Silver *																					
12	Thallium																					
13	Zinc *																					
14	Zinc *																					
15	Zinc *																					
16	2,3,7,8-TCDF																					
17	Acrylonitrile																					
18	Benzo(a)pyrene																					
19	Benzene																					
20	Bromodichloromethane																					
21	Carbon Tetrachloride																					
22	Chlorobenzene																					
23	Chloroform																					
24	Chloroethane																					
25	2-Chlorophenyl ether																					
26	Chlordane																					
27	Dichlorobromomethane																					
28	1,1-Dichloroethane																					
29	1,2-Dichloroethane																					
30	1,1,1-Trichloroethane																					
31	1,2-Dichloropropane																					
32	1,3-Dichloropropane																					
33	Ethylene oxide																					
34	Methyl Bromide																					
35	Methyl Chloride																					
36	Methylene Chloride																					
37	1,1,2,2-Tetrachloroethane																					
38	1,1,2,2-Tetrachloroethane																					
39	Trichloroethylene																					
40	1,2-Triisobutylbenzene																					
41	1,1,1-Trichloroethane																					
42	1,1,2-Trichloroethane																					
43	Trichloroethylene																					
44	Vinyl Chloride																					
45	2-Chlorophenol																					
46	2,4-Dichlorophenol																					
47	2,4-Dichlorophenol																					
48	2-Methyl-4-Ethylphenol																					
49	2,4-Dichlorophenol																					
50	2-Nitrophenol																					
51	4-Nitrophenol																					
52	3-Methyl-4-Chlorophenol																					
53	2-Nitrophenol																					
54	2-Nitrophenol																					
55	2,4-Dichlorophenol																					
56	2,4-Dichlorophenol																					
57	Acetophenone																					
58	Acetophenone																					
59	Anthracene																					
60	Benzo(a)anthracene																					
61	Benzo(b)fluoranthene																					
62	Benzo(k)fluoranthene																					
63	Benzo(b)fluoranthene																					
64	Benzo(b)fluoranthene																					



Tesoro Golden Eagle Refinery  
Attachment 4  
General Basis for Final Compliance Dates [1]  
for Discharges North of the Dumbarton Bridge  
*Revised March 21, 2005*

Constituent	Reference for applicable standard	Compliance date and Basis
Cyanide Selenium	NTR	<b>April 27, 2010</b> Basis is the Basin Plan.
Dioxins/Furans	Narrative BP using SIP methodology	<b>10-yr from effective date of previous permit</b> (which is when new standard was adopted). Basis is the Basin Plan, see note [2b].
PCBs	CTR	<b>May 17, 2010</b> Basis is the CTR and SIP.

[1] These dates are maximum allowable compliance dates applicable. As required by the Basin Plan, CTR, SIP, and 40CFR122.47, compliance should be as short as possible. These are only applicable for discharges north of the Dumbarton Bridge because applicable criteria for the south bay are different than those cited above.

- For pollutants where there are planned TMDLs or SSOs, and final WQBELs may be affected by those TMDLs and SSOs, maximum timeframes may be appropriate due the uncertain length of time it takes to develop the TMDL/SSO.
- However, for pollutants without planned TMDLs or SSOs, the State Board in the EBMUD remand order (WQO 2002-0012), directs the Regional Board to establish schedules that are as short as feasible in accordance with requirements.

[2] The Basin Plan provides for a 10-year compliance schedule for implementation of measures to comply with new standards as of the effective date of those standards. This provision has been construed to authorize compliance schedules for new interpretations of existing standards, such as the numeric and narrative water quality objectives specified in the Basin Plan, if the new interpretations result in more stringent limits than in the previous permit.

- a. For the numeric objectives in place since the 1995 Basin Plan, due to the adoption of the SIP, the Water Board has newly interpreted these objectives. The effective date of this new interpretation is the effective date of the SIP (April 28, 2000) for implementation of these numeric Basin Plan objectives.
- b. For narrative objectives, the Board newly interpreted these objectives using best professional judgment as defined in the Basin Plan for each permit. Therefore, the effective date of this new interpretation will be the effective date of when this interpretation is first made by the Board.